



*This is y^e Press & Pen we Mortals owe All hail y^e great Preservers of these Arts.
 All we believe & almost all we know That raise our thoughts & Cultivate our Parts.*

THE INSTRUCTOR: OR,

Young Man's Best Companion.

CONTAINING

Spelling, Reading, Writing, and Arithmetic, in an easier Way than any yet published; and how to qualify any Person without the help of a Master.

Instructions to write Variety of Hands, with Copies both in Prose and Verse. How to write Letters on Business or Friendship. Forms of Indentures, Bonds, Bills of Sale Receipts, Wills, Leases, Releases, &c.

Also Merchants Accompts, and a short and easy Method of Shop and Book-keeping; with a Description of the Product, Counties and Market-Towns in ENGLAND and WALES; and a List of the Fairs according to the New Style, Together with the METHOD of measuring Carpenters, Joiners, Sawyers, Bricklayers, Plasterers, Plumbers, Masons, Glaziers, and Painters Work. How to undertake each Work, and at what Price; the rates of each commodity; and the common Wages of Journeymen; with the Description of GUNTER's Line, and COGGESHALL's Sliding Rule.

Likewise the PRACTICAL GAUGER made Easy: the Art of Dialling, and how to erect and fix Dials; with Instructions for Dying, Colouring, and making Colours; and some General Observations for Gardening every Month in the Year.

To which is added

The FAMILY'S BEST COMPANION;
With Instructions how to Pickle and Preserve;
to make divers Sorts of Wine; and many excellent Plasters,
and Medicines, necessary in all Families: And

A COMPENDIUM of the SCIENCES of
GEOGRAPHY and ASTRONOMY;

Containing a brief Description of the different Parts of the
Earth, and a Survey of the CELESTIAL BODIES.

Also some useful INTEREST TABLES.

By *GEORGE FISHER* Accomptant.
The Twenty-fifth Edition, Corrected and Improved.

L O N D O N:

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THE
P R E F A C E.



Need say but little by Way of Preface, in relation to the Usefulness of this Book, the Title Page so fully declaring its Contents: But as a Preface is usually expected I cannot well avoid saying something with respect to its Utility.

As to the first Step of forming the young Man's Mind for Business, viz. The being instructed in, and acquainted with our Mother Tongue, viz. English, it must be, and is acknowledged by all, to be a necessary and principal Qualification in Business, and therefore it is of great Importance to be well acquainted therewith.

In the next Place, to write a good, fair, free, and commendable Hand, is equally necessary in most, if not in all the Affairs of Life, and Occurrences of Business.

The young Man is, next, informed how to indite Epistles or Letters in a familiar Stile, and on sundry Subjects and Occasions: With Directions how to subscribe or conclude a Letter, and also to superscribe or direct Letters, according to the different Ranks and Qualities of the Persons to whom directed: And this must be allowed to be a very great additional Qualification.

The next Accomplishment for a young Man, and largely treated on in this Book, is that excellent Science of Arithmetic, both Vulgar and Decimal: Leading him by the Hand, and by easy Steps, through its whole Course.

Again, the young Man is next shewn the ingenious Art of Book-keeping after the Italian Manner, by way of Double Entry; and that is an Accomplishment that capacitates him for Business in the highest Degree: Under which Head, he is also informed how to draw out, or make various sorts of Accounts or Writings relating to Mercantile Affairs; as Bills of Lading, Invoices, Accounts of Sales, together with authentic Examples of Bills of Exchange, with Notes concerning them; likewise Bills of Parcels of divers Kinds; also various sorts of Receipts, &c. All which is expedient for a young Man to know and understand, if he would be dextrous in Business.

The young Man is here also instructed in relation to the Affairs of Business at the Water-side, as to Shipping off and Landing Goods, &c.

He hath also a Description of England and Wales, each County being particularly spoken of, with respect to its Product, Soil, and Extent, and likewise the Names of its several Market-Towns: and a List of the Fairs now held in them, as they have been settled since the Alteration of the Stile.

Here are also easy, plain, and likewise curious Directions for Measuring all sorts of Planes and Solids (Arithmetically and Instrumentally) as the Works of Carpenters, Joiners, Sawyers, Bricklayers, Masons, Plasterers, Painters, Glaziers, &c, with the Prices of the Works.

Here is likewise shewn the Method of extracting the Square and Cube Roots, with some of their Uses, in relation to Measuring, &c.

Also Practical Gauging of divers Kinds of Vessels, Tuns, &c. Likewise Dialling in various Kinds, with the Representation of several sorts of Dials, and how to beautify and adorn them.

Next are Precedents of Law-Writings, as Bonds, Bills, Indentures, Wills, Letters of Attorney, &c.

Lastly,

Lastly, some Directions relating to the pleasant and delightful Art of Gardening, with general Observations for every Month in the Year. To which are subjoined some Instructions, to young Women how to pickle and preserve all Kinds of Fruits and Flowers, &c. with Instructions for making divers sorts of Wines, of English Growth; and also for preparing many excellent Medicines, Plasters, &c. with several good Prescriptions of proper Use, against most Distempers: Fit for, and necessary in all Families.

To the whole is now added a compendious System of Geography and Astronomy: The first is of great Utility to the trading Part of Mankind, and to those who would have an adequate Idea of what they read, in History or otherwise, of the Transactions in different Parts of the Earth: and the second is of like Service to those who would contemplate the heavenly Bodies and is purposely designed, to give the unexperienced Reader some small Idea of the almost inconceivable Number of Bodies (most of them, much superior in Magnitude to our World, as we vainly term it) which the almighty and infinite Creator hath placed in the Universe, and exhibited to the View and Conception of Mankind.

Also concise Tables to find the Value of Portugal Pieces; to buy or sell by the Great Hundred; and to show the Interest of any Sum at 3, 4, and 5 per Cent.



THE
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O R,

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INSTRUCTIONS

FOR

YOUTH,

TO SPELL, READ, and WRITE

TRUE ENGLISH.

The Use of Letters ; which are Vowels and which are Consonants ; what Diptongs are, their Number, and how pronounced and written.

THE Design of this Book being to instruct Mankind, especially those who are young, in the Methods of conversing and transacting Business in the World ; therefore that most necessary Accomplishment of Spelling and Writing good and proper *English*, claims the first Notice ; for let a Person write ever so good a Hand, yet if he be defective in Spelling, he will be ridiculed, and contemptibly smiled at, because his writing fair will render his Orthographical Faults more conspicuous. Therefore,

First, Take Notice, That of Letters are made Syllables, of Syllables Words, and of Words Sentences, &c.

The Letters are in Number 26 ; viz, *a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, and z* ; of these, *j* and *v* were formerly wrote *i* and *u* ; and have for that reason been frequently called *i* Consonant and *u* Consonant ; but they have been of late more properly called *ja* and *ve*. In these Letters we are to observe their Names, their Form, and their Force : Their Names, whereby to know them ; their Form, whether great or small ; and their Force in Pronunciation or Utterance.

B

Letters

14 *The Young Man's best Companion.*

Letters are distinguished according to their Sound into Vowels and Consonants: A *Vowel* is a Letter that soundeth by itself, and they be six in Number, viz. *a, e, i, o, u, and y*, the *Greek Vowel*; which also is an *English Vowel*, when it cometh after a Consonant, and hath the sound of *i*; as in *by, fly, reply, Syllable, &c.* but is never used, in Words not derived from a foreign Language, otherwise than at their End. A Consonant is a Letter that soundeth not, except it be joined with a Vowel, for without one of the Vowels no Syllable can be made; as *b, c, d, &c.* without the Aid of a Vowel, cannot be sounded. Though we have 26 Letters, and 6 of 'em *Vowels*, yet we have 21 *Consonants*; for *y*, when set before any *Vowel* in the same Syllable, becomes a *Consonant*; as in *youth, yonder, beyond, &c.* Note, That *j* hath the Sound of *g*, as in *join, jangle, jingle, &c.*

When two Vowels come or meet together in a Syllable, and are not parted in the Pronunciation, but united in one sound, such are called *Diphthongs*; of these there are 13, viz. *ai, ei, oi, ui, au, eu, ou, ee, oo, oa, and ie*; as in *maid, faith, either, join, aul, eunuch, stout, feed, seed, food, brood, health, wealth, people, steeple, boat, goat, heat, beat, feat, friend, field, &c.* Note, That in the first 7 Words both *Vowels* are sounded; but in the other 15, one of them is scarcely heard.

There are also those that are called *Triphthongs*, where three *Vowels* meet in one Sound; *beauty, beau, lieu, and quaint*: Likewise *ay, oy, uy; aw, ew, and ow*, become *Diphthongs* at the End of Words, but are called *improper Diphthongs*; as in *say, key, joy, saw, bow, &c.* Note, *aw, ew, and ow*, are commonly sounded as *au, eu, and ou*.

Of Letters Great and Small, and when to be used.

FIRST Negatively, *Great Letters* are not to be used in the Middle or latter End of a Word, except the whole Word be so written, as in *JEHOVAH, LORD*, or in Titles of Books, &c. For it would be very absurd to write thus: To Mr. geORge RoGeRs in thaMes street; instead of, To Mr. George Rogers in Thames-street.

SECOND positively, *Great Letters, or Capitals*, are to be written at the Beginning of Sentences: as, *Fear God, Honour the King, Know when to speak, and when to hold your Tongue.*

After



After every Period, or full-stop; when new Matter begins: As, *Some Time after that Accident, another happened, which was as follows. On the 24th Day of June, &c.*

At the Beginning of all proper Names of Places, Ships, Rivers, &c. as *London, the Dreadnought, Thames, Severn*: Also the Christian Names, and Surnames, both of Men and Women, must begin with great Letters; as *Samuel Sharp, Mary Sweeting, &c.*

At the Beginning of the more eminent Words in a Sentence: As *Faith is the Foundation of the Christian Religion*; or, if any Word that we have a particular Regard or Deference for; as, *God, Christ, King, Queen, &c.*

At the Beginning of every Line in Poetry; as,
*Improve your Time; Time passeth quickly on;
Nor doth so good succeed as that that's gone.*

At the Beginning of the Names of Arts, Sciences, and Trades; as *Writing, Arithmetic, Geometry, Music, Carpenter, Smith, &c.*

Note, The personal Pronoun I, and the Interjection O, must be always wrote in Capitals; for it is ridiculous to write thus: *On Monday last i came to your House, but you was not at home; o how it grieved me!*

Lastly, All Nouns Substantives may begin with a great Letter; and the Substantive may be known by the Signs either of *a, an, or the* before them; as, *a House, a Mill, an Ox, an Ass, the City, the River, &c.* but the Adjective (which declares what Sort of a Thing the Substantive is) should be wrote with a small Letter; as, *the white Horse, the long Rope, brown Bread, fat Beef, &c.* and small Letters are commonly written in all other Places.

Note, This Custom of beginning all Substantives with Capital Letters, is not followed, at present, by polite Authors.

The small Letter *s* is commonly written *f* at the Beginning and in the Middle of a Word, and *s* at the End; but if two of them come together in the Middle of a Word, they may be written thus, *fs*.

Observations concerning the Sound of Letters, and which are omitted in Pronunciation.

A Is not founded in *Pharoah*, nor in *Sabaoth*, but as if written in *Pharo* or *Saboth*; neither in *Marriage*, but as *Marridge*; also *Parliament* as *Parliment*, and *Chaplain* as

Chaplin, &c. In some proper Names it is not founded, but dropt in the Pronunciation ; as in *Aaron*, *Isaac*, *Canaan*, *Balaam* ; which are pronounced as if written, *Aron*, *Isac*, *Canan*, *Balam* ; but we must except *Ba-al* and *Ga-al*. *A* is founded broad, like *aw*, in Words before *ld* and *ll* ; as in *bald*, *scald*, *ball*, *wall*, *fall*.

B is not founded in *thumb*, *dumb*, *plumb*, *lamb*, *doubt*, *debt*, *subtle*, &c. but founded as if written. *thum*, *dum*, *lam*, *dout*, *det*, *futtle*, &c.

C is founded hard like *K*, before *a*, *o*, and *u*, and before *l* and *r* ; as in these Words, *cane*, *came*, *comb*, *cub*, *clay*, *crane*, *crab* ; and soft in *cement*, *city*, and *tendency* : *C* closeth its found in *scene*, *science*, *virtuals*, and *verdict* ; likewise in *indict*, *indictment*, also before *k*, as in *stack*, *rack*, *stick*, *thick*, *brisk*. In Words of Greek and Hebrew Derivation. *C* is founded like *K*, as in *sceptic*, *skeleton*, *Cis*, *Aceldama*, &c.

Ch is founded like *K*, in many foreign Words, some of which occur in the Holy Scripture ; as in *Chorus*, *Chymist*, *Chrifestom*, *Christ*, *Chedarlaomer*, *Baruck*, *Archippus*, &c. In the Word *Schism*, the Sound of *Ch* is lost, it being founded as if wrote *fism* ; and in the Words *Rasbael*, *Cherubim*, and *Archbishop*, it is founded in the English manner. *Ch* in French Words sounds like *sh*, as in *Chevalier*, pronounced *Shevalier* ; *Machine*, *Masheen*, *Mareschal*, *Marshal* ; *Capuchin*, *Capusheen* ; *Chaise*, *Shaize*, &c.

D is not founded in *Ribband* nor *Wednesday*, which are pronounced *Ribbon* and *Wensday* ; the Termination *ed* is often shorten into *t* ; as, *burned*, *burnt* ; *choaked*, *choakt* ; *ripped*, *ript* ; *chopped*, *chopt* ; &c.

E is not founded in *earth*, neither in *heart*, nor *dearth*, &c. *E final*, that is placed at the End of a Word, is seldom heard but in Monosyllables, as in *me*, *he*, *she*, *ye*, *thee*, &c. where it hath the Sound of *ee* : And in Words derived from foreign Languages, in which *e* hath its perfect Sound ; as *Jessée*, *Jubilee*, *Mamre*, *Nineve*, *Candace*, *Cloe*, *Eurice*, *Penelope*, *Salmoné*, *Phoebe*, *Epitome*, *Catastrophe*, *Gethsemane*, *Simile*, *Premunire*, &c. In all other Cases *E final* serves only to lengthen the Sound, and to distinguish it from other Words of different Meaning, which are wrote without *e*, and are founded short ; as in these Examples following, viz. *cane*, *can* ; *bate*, *bat* ; *bite*, *bit* : *fare*, *far* ; *hope*, *hop* ; *made*, *mad* ; *mane*, *man* : *scrape*, *scrap* ; *stare*, *star* ; *tune*, *tun* ; *write*, *writ*, &c. in Words of more than one Syllable, it lengthens the Sound

of

of the last Syllable, but doth not increase the Number of Syllables; as *admire*, *demise*, *blaspheme*, &c. *E* lengthens the Syllable also in some foreign Words, such as *Eve*, *Tyre*, *Crete*, *Ode*, *Scheme*, *Dialogue*, *Kenite*, and *Shu-la-mite*. *E*, is seldom wrote after two Consonants; as in *pass*, *turn*, *black*; not *passè*, *turne*, *blacke*. Yet after *rs* it is used, as *horse*, *nurse*, *purse*; not *hors*, *nurs*, *purs*. Also the Words ending in *cre*, *gre*, and *tre*,, sound the *e* before the *r*, as in these Words; *acre*, *lucre*, *centre*, *sepulchre*, *tygre*, *maugre*, *mitre*, *lustre*; which are sounded as if written *aker*, *luker*, *center*, *sepulcher*, *tyger*, *mauger*, *miter*, and *luster*. *E final* also serves to soften *c* and *g*, as in *ace*, *place*, *lace*, *spice*, *truce*, *oblige*, *huge*, *age*, &c. If Nouns in *e final* take *s* after them with an Apostrophe before it, it stands for *his*, as *the Pope's Eye*, or the *Eye of the Pope*, the *Table's Foot*,, or the *Foot of the Table*. If without an Apostrophe, it makes the Plural Number, as *Popes*, *Tables*. Words derived from those wrote with *E final* seldom retain it, as in *writing*, *loving*, *doing*, &c. not *writinge*, *loveing*, or *doeing*; except in the Termination *ge* and *ee* before *able*, as in *changeable*, *peaceable*, &c. *E* should not be written after a Dipthong in these Words: *vain*, *main*, *gain*, *fear*, *know*, &c. not *vaine*, *maine*, *gain*, &c. *E final* is annexed, but not sounded in those Words which would otherwise end with *i*, *o*, or *u*; as in *die*, *foe*, *sloe*, *true*, *virtue*, &c. but there are some Exceptions, as *do*, *so*, *to*, &c. Lastly, there are some Words in which the *final E* doth not lengthen the Sound, as *give*, *live*, *some*, *one*, *done*, &c.

F in Plurals is changed into *v*; *wife*, *wives*; *staff*, *staves*.

G is not sounded in *sign*, *reign*, *gnaw*, *gnat*, *assign*, *design*, *seignior*, *seraglio*, *phlegm*, &c. *G* is sounded soft in *gender*, *ginger*, and *gipsy*; but hard in *Gibeon*, *Giberab*, *Gilboa*, *Geth-se-mane*; and also hard in these proper Names, *Gibson*, *Gilman*, and *Gilbeat*; and also in these common Words, *gelt*, *geld*, *girt*, *gimp*, *geese*, *gander*, *gamble*, *garter*, *gather*, *gild*, &c. Observe, That if *G* be hard with a long Vowel, *ue* is joined and pronounced in the same Syllable; as in *Plague*, *Prague*, *Hague*, *Rogue*, *League*, *Dialogue*, *Catalogue*, &c.

Gb in the End of some Words, where *au* or *ou* goes before, hath the Sound of *ff*, as in *tough*, *rough*, *cough*, *laugh*, sounded as if *tuff*, *ruff*, *coff*, *laf*; but *tuff*, *cuff*, *snuff*, and *buff*,

must be so written. *Gh* is not sounded in *mighty, though, through, Daughter, and Vaughan.*

H hath Place, but no Sound in *Chronicle, Christ, Ghost, John, Rhine, Schedule, and Schism, &c.* *H* is not sounded at the End of Words, if it be alone, but with *te* before it, it is sounded as *snatch, watch, &c.*

I is not sounded in *adieu, juice, venison, fruit, bruise, Salisbury*; it is sounded like *ee* in *oblige, Magazine, and Machine, &c.* *I* is sounded long in proper Names ending in *iah, Jeremiah, Hezekiah*; but short in *Ariel* and *Miriam.* *I* is sounded like *u* in *first, dirt, bird, &c.*

K is nearly allied in Sound to *C*; but to know when to use one, and when the other, *Note*, that *C* hath the Force of *K* only before *a, o, oo, and u,* and these two Consonants *l* and *r*; and therefore we must write *kare* for *care, korw* for *cow, krown* for *crown*: And the Use of *K* is only before *e, i, and u*; wherefore we must write *keep, key, knight, kill, &c.* not *ceep, cey, cnight, nor cill*: But the Words *Calender* and *Catharine,* are wrote sometimes *Kalendar, or Katharine.* *K* is written after *c* only in pure *English* Words, such as *back, deck, sick, &c.* for the best Authors have omitted it in Words derived from the *Greek* and *Latin,* such as *public, music, physick, &c.*

L is not sounded in *calf, half, chalk, stalk, walk,* those Words being pronounced as if written *case, hase, chawk, stawk, wawk.* Neither is *l* sounded in *Bristol, Holborn, Lincoln, salmon or chaldron*; these are sounded as if writ, *Bristow, Hoborn, Lincon, sammon, and chaudron*; nor in *Colonel,* where the first *l* hath the Sound of *rr,* as *Corrnel.*

In the word *accept, mp* is sounded like *un.*

N is not heard in *autumn, lime-kiln, solemn, limn, hymn, column, and condemn.*

O is not sounded in *people, peofee, bason, mutton, yeoman, masen, righteous, bacon, jeopardy and crimson.* *O* sometimes sounds like *oo*; as in *doing, moving, proving, &c.* *O* is not heard in *damofel, carrion*; which are pronounced as if writ, *damsel, carrin.* *O* is sometimes sounded like *i*; as in *women* and *flagon,* pronounced as if *wimmin* and *flagin.* And sometimes *O* is sounded as *u,* as in *money, conduit, conjure, attorney, Monmouth, &c.* being heard as if writ *munney, cundit, conjure, atturney, Munmoth, &c.* and it is sounded like *oo,* in *do, to, prove, move, &c.*

P is

P is written, but not sounded, in *empty*, *presumptuous*, *psalm*, *sumpter*, *attempt*, *psalter*, and *symptom*; also in *sumptuous*, *contemptuous*, *receipt*, and *consumptive*, &c.

Pb has the sound of *f*, when together in one Syllable; as in *philosophy*, *physician*, *Asaph*, and *Elephant*; but we must not write *filosophy*, *fsician*, *Asaph*, and *Elefant*: *Pb* are parted in *shep-herd*, *up-hold*, and in *Clap-ham*; and other such compound Words.

After *Q* always follows *u* in all Words; and in some *French* and *Latin* Words these have the Sound of *k*; as in *risque*, *liquor*, *catholique*, *banquet*, *conquer*, *masquerade*, *chequer*; pronounced as *risk*, *likker*, *catholic*, *banket*, to which add, *oblique*, *relique*, *antique*, which are pronounced as if written *oblike*, *relike*, *antike*, &c.

S is not sounded in *island*, *viscount*, *isle*, and *Lisle*; which are pronounced as if wrote *iland*, *vicount*, *ile*, and *Lile*.

S, at the end of Words, sounds hard, like *z* in Words of the plural Number, and in Words of the third Person; as *names*, *words*, *he reads*, *she bears*: *S* sounds hard in some Words that terminate in *sion*, as in *circumcision*, *evasion*, *delusion*; but also a Consonant soft, as in *conversion*, *commission*, *dimension*. *S* is likewise sounded hard in these Words, *raise*, *praise*, *chaise*, *cheese*, *these*, *compose*, *expose*, *bruise*, *refuse*, *applause*, *pause*, *clause*, *wisdom*, *casement*, and *damsel*.

Th sounds fine in *thin*, *think*, and *wrath*; and is sounded hard in *thee*, *then*, *they*, *that*, *blithe*, *tythe*, and *sytbe*; also in *mother*, *brother*, *hither*, *thither*; and in *lothe*, *clothe*, and *clothier*, &c.

Ti before a Vowel or a Diphthong, hath the Sound of *fi* or *sh*: as in *patience*, *dictionary*, *Gretian*, *oblation*, *nation*, *translation*, except when *f* goes just before it, as in these Words, *question*, *fustian*, *bastion*, *combustion*, and *celestial*, *bestial*, &c. But, in some Words, of *Hebrew* and *Greek*, *ti* retains its natural Sound, as in *Shealtiel*, *Phaltiel*, *Sepatiab*, *Cotittia*, *Admittum*, and the like; and in the *English* Derivatives *mightier*, and *mightiest*, *emptiest*, *emptied*, *pitiableness*, &c.

U is sounded like *i* in *bury*, *birry*; *busy*, *bizzy*; *business*, *bizziness*. *U* is sometimes written after *g* without being sounded, as in *guide*, *guard*, &c. It is also silent in the Words *buy*, *built*, *conduit*, *circuit*, *labour*, *favour*, *honour*, &c. but it is sounded in others, as *anguish*, *languish*, *Montague*, &c.

W is

W is not founded in *answer*, *sword*, *whore*, *swoon*, &c. neither is it heard before *r* in *wrap*, *wrath*, *wrong*, *wretch*, *wreath*, *wrangle*, *wriggle*, &c.

Wh belongs to Words purely English ; as *what*, *where*, and *wheel*.

X is founded as *x* *Xenophon*, *Xerxes*, *Xenocrates*, and *Xantippe*.

Y is either a Vowel or Consonant, as hinted before : A Vowel in *my*, *by*, *fly*, *thy* ; and sometimes, when a Vowel, it hath the sound of *ee*, as in *worthily*, *christianity*, *liberty*, *formerly*, *formally*, *Normandy*, and *Dorothy*. In derivative English Words, having the Termination *ing*, *y* is used in the Middle of the word, as in *buying*, *dying*, *burying*, *marry-ing*, &c.

The Dipthongs *ai* and *ay*, have the Sound of *a* in *air*, *fair*, *pair*, *may*, *stay*, *play* ; but *a* is lost in *Calais* (a Town in France) and pronounced separately in *Sinai* (a Mountain in Arabia.)

Ei and *ey* are sounded like *a* in *eight*, *stratght*, *neighbour*, *heir*, *veil*, and *convey* ; like *e* in *key*, and like *i* in *sleight*.

Oi and *oy* have a Sound peculiar to themselves ; as in *oil* and *oyster* ; but make no Dipthong in the Derivatives *going*, *doing*, &c.

Au and *aw* commonly keep a proper Sound, as in *augur*, *austere*, *daw*, *maw*, *saw*, &c. but *u* is lost in *aunt* and *gauger*, being sounded as *ant* and *gager* ; they make no Dipthong in *Em-ma-us* and *Ca-per-na-um*.

Eu and *ew* have an united Sound in most Words, as in *feud*, *brew*, *new*, and *grew* ; but *eu* is no Dipthong in *Zac-che-us* and *Bar-ti-me-us*.

Ou is expressed in *soul*, *soul*, *proud*, *loud* ; and *ow* in *bow*, *cow*, and *now* ; but *ou* sounds like *oo* in *soup*, (a French Dish) and *Cooper* (a Man's Name) which are sounded as if *soop* and *Cooper*.

Ee is no Dipthong in *Be-e-rites*, *Be-er-she-ba*, and in Words beginning with *re*, or *pre* ; as *re-en-ter*, *pre-e-mi-nence* : In *Beelzebub* one of the *e*'s is not sounded.

Oo is properly sounded in *cool*, *fool*, *pool*, *root*, and *tool*, but hath the sound of *u* in *foot*, *foot* ; it makes no Dipthong in *Co-os*, *co-o-pe-rate*.

Ea sounds like *e* in *sea*, *pea*, *seam*, *ream*, *bread*, *head*, *lead*, *dead*, *leather*, *feather*, *heaven*, *leaven*, and *creature* ; it is

no

no Dipthong in *ven-ge-ance*, *mis-cre-ant*, or any *Hebrew*, *Greek* or *Latin* Words ; as in *Ka-desb-Bar-ne-a*, *Kir-jath-je-a-rim*, nor in *Ce-sa-re-a*, *i-de-a*, *o-ce-an*, *re-al*, *bea-ti-tude*, *cre-a-tor* ; nor in Words beginning with *pre*, as *pre-am-ble*, &c.

Eo is no Dipthong in *dun-ge-on*, *bi-de-ous*, *me-te-or*, *pi-ge-on*, *the-o-ry*, &c.

Oa is sounded as *o*, in *goat*, *boat*, and *coat* ; it is sounded broad, as *au* in *broad* and *groat*, but it is no Dipthong in *Go-a* (a City in *India*) or in the *Hebrew* Words *Zo-an*, *Zo-ar*, and *Gil-bo-a*.

Ie before a single Consonant sounds like *ee*, as in *brief*, *chief*, and *thief* ; but if before two Consonants, it sounds like *e* ; as in *friend*, *field* ; but at the End of *English* Words the *e* is not heard ; as in *die*, *signifie* ; it is no Dipthong in *A-be-e-zer*, *E-li-e-zer*, nor in the *English* Words *di-er*, *car-ri-er*, *clo-thi-er* ; nor in Words derived from the *Latin*, as *cli-ent*, *o-rient*, *qui-et*, and *sci-ence*.

Ui is sounded like *u* in *juices*, *fruit*, and *suit* ; but *u* is lost in *conduit*, *built*, and *guise*, and is no Dipthong in *je-su-it*, *ge-nu-ine*, and *fru-i-ti-on*.

Æ and *OE* are not *English* Dipthongs ; they are used in *Æsop*, *Æneas*, *Ætna*, *Cæsar*, *Oedipus*, *Oeconomy*, and sound like *e* ; but in common Words they are neglected, as in *equity*, *female*, and *tragedy*, though derived of *aqui-tas*, *fæmina*, and *tragædia*.

Of Syllables, and their Division, being the Art of Spelling.

A Syllable is a tacking Letters together, and uttering them with one Breath, as *vir-tue* ; so that *virtue* being thus divided, or taken asunder ; makes two Syllables, *viz.* *vir* and *tue* ; which, put together, form the Word *virtue*. And many Times a Vowel, or a Dipthong of themselves, make a Syllable, as in *a-bate*, *eve-ry*, *i-dle*, *u-su-ry* ; and in *au-ger*, *Eu-pace*, *own-er*, *ai-der*, *oy-ster*, *Ea-ton*, *oa-ten*.

No Syllable can be made, be there ever so many Consonants, or so few, without the Aid of a Vowel or Dipthong.

The longest Monosyllables we have in *English*, are *length*, *strength*, and *straight* ; which could not be sounded without the Vowel *e* or *i*.

The Art of Spelling may be reduced to these four following general Rules or Heads.

1st. When

1. When a Consonant comes between two Vowels in dividing the Word into Syllables, the Consonant is joined to the latter Vowel ; as in *sta-ture*, *na-ture*, *de-li-ver*, *u-ni-ty*, &c. except compound Words, which terminate in *ed*, *en*, *est*, *eth*, *er*, *ing*, *ish*, and *ous* ; as *coast-ed*, *gold-en*, *know-est*, *know-eth*, *bear-er*, *fool-ing*, *bar-ba-rous*, *ra-ve-nous*, and *sub-urbs*.

2dly. When two Consonants come together in the Middle of a Word, they are to be parted, if not proper to begin a Word ; as *num-ber*, *stran-ger*, *for-tune*, &c. not *numb-er*, *strang-er*, *fort-une*. When the Consonant is doubled in a Word, the first belongs to the foregoing, and the latter to the following Syllable, as in the Rule above. and in these Words, *Ab-ba*, *ac-cord*, *an-ne*, *ad-der*, &c.

3dly. Consonants that begin Words must not be parted in the Middle ; as *a-gree*, *be-flow*, *re-frain*, &c. not *ag-ree*, *bes-tow*, *re-frain*. These Consonants may begin Words, viz. *bl*, *br*, *ch*, *cr*, *dr*, *dw*, *f*, *gb*, *gr*, *kn*, &c. as *blunt*, *break*, *chaw*, *cry*, *draw*, *dwelt*, *flesh*, *ghost*, &c.

4thly. When two Vowels come together, not making a Diphthong, they must be divided, as in *vi-al*, *va-li-ant*, *Li-o-nel*, *du-el*, *me-te-or*, *La-o-di-ce-u*.

Some particular Notes.

L is doubled in Words of one Syllable as, *well*, *tell*, *swell*, *hall*, *wall*, *fall*, *will*, *hill*, *mill*, &c. But in Words of more than one Syllable, the word always terminates with single *l*, as *angel*, *Babel*, *hurtful*, *beautiful*, and *dutiful*. Neither must *l* be doubled in *always*, *also*, *although* ; not *allways*, *allso*, *allthough*, &c. but Words accented on the last Syllable must be excepted from the Rule above, viz. *install*, *recall*, *inroll*, *rebell*, and *repell*.

Y must be used before the Termination *ing*, as *buying*, *lying*, *carrying*, *paying*, *slaying*, *burying*, &c.

The long *s* must never be used at the End of a Word, or immediately after the short or small *s*.

X should be used instead of *et* where it appears to have been in the Original ; as *reflexion*, *connexion*, rather than *reflection* or *connection*.

Remember, that if you cannot write out the whole Word at the End of the Line, you must break it off at the End of a Syllable

Syllable *th*u _____ *con-*
demn ; not thus _____ *cond-*
emn : Again _____ *dis-*
charge ; not _____ *disc-*
charge.

C must not be put between two Consonants ; as *think*, not *thinck* ; *thank*, not *thanck* ; *brink*, not *brinck* ; but if a Vowel goes before *c*, you must write *c* before *k*, as *brick*, *thick*, *stick*, &c.

Pb, must be retained in Words of a foreign Original, as *prophet*, not *profet*.

Of *S* and *C*. Some People may easily drop into Error by mistaking *S* for *C*, as in the Beginning of the following Words, where *C* hath the perfect Sound of *S*, though *C* must undoubtedly be written ; viz. in

Cieling	Cinnamon	Cell	Ceruse
Celestial	Ceremony	Censer	Centre
Civet	Cellar	Celerity	Cinque
Certain	Censure	Cypress	Cypher
Cymbal	Censor	Circle	City
Cistern	Cease	Circuit	Citron
Centurion	Celebrate	Cement	

But these Words must be written with *S*, viz.

Science	Sceptre	Scarcity	Sciatica
Schedule	Scheme	Schism	Scythian

The following Words should be wrote,

with <i>ti</i>	with <i>fi</i>
Contention	Confusion
Action	Occasion
Contradiſtion	Confession
Attention	Oppression
Benediction	Allusion
Apparition	Ascension
Concoction	Aversion
Declaration	Asperſion
Ambition	Commission
Contrition	Comprehension
Oration	Circumcision
Oblation	Conclusion

The following Words should be ſpelt thus :

Paſſion, not paſhon Salisbury, not Salſbury
Fashion,

Fashion, <i>not</i> fashon	Leicester, <i>not</i> Lester
Cushion, <i>not</i> Cushon	Shrewsbury, <i>not</i> Shrosbury
Gloucester, <i>not</i> Gloster	Carlisle, <i>not</i> Carlile
Worcester, <i>not</i> Worker	Westminster, <i>not</i> Westminster

And Qualification in Spelling, is rightly to distinguish Words of the *same Sound*, though widely different in their Sense and Signification; such are these that follow:

A	<i>A Peer, a Lord</i>
<i>A B E L, Cain's Brother</i>	<i>Array, good Order</i>
<i>Able, to do a thing</i>	<i>Array, to clothe</i>
<i>A Bell, tolling</i>	<i>A Rose, to smell at</i>
<i>Accidents, Chances</i>	<i>Arose, did arise</i>
<i>Accidence, a Book</i>	<i>Are, they be</i>
<i>Acre, of Land</i>	<i>Air, we breathe</i>
<i>Acorn, of an Oak</i>	<i>Heir, to an Estate</i>
<i>Achor, a Valley of that name</i>	<i>Arrant, notorious</i>
<i>Advice, Counsel</i>	<i>Errand, a Message</i>
<i>Advise, to counsel</i>	<i>Arrows, to shoot</i>
<i>Account, esteem</i>	<i>Arras, Hangings</i>
<i>Accomp, or reckoning</i>	<i>Harrafs, to fatigue</i>
<i>Ale, a Drink</i>	<i>A scent, or Smell</i>
<i>Ail, Trouble</i>	<i>Ascent, or going up</i>
<i>All, every one</i>	<i>Assent, Agreement</i>
<i>Awl, for Shoemakers</i>	<i>Assistance, Help</i>
<i>Alley, a narrow place</i>	<i>Assistants, Helpers</i>
<i>Ally, a Friend or Confederate</i>	<i>Augur, a Soothsayer</i>
<i>Allay, to give ease</i>	<i>Augure, to bore with</i>
<i>Alloy, base Metal</i>	<i>Ax, to cut with</i>
<i>Altar, for Sacrifice</i>	<i>As, of Parliament</i>
<i>Alter, to change</i>	<i>Austere, Severe</i>
<i>Aleboof, an Herb</i>	<i>Oyster, a Shell-fish</i>
<i>Aloof, at a Distance</i>	B
<i>Allow'd, approv'd</i>	<i>Babel, the Tower</i>
<i>Aloud, to speak to</i>	<i>Babble, to prate</i>
<i>Amis, wrong</i>	<i>Bacon, Hog's Flesh</i>
<i>A Miss, Mistress</i>	<i>Baken, in the Oven</i>
<i>Ant, a Pismire</i>	<i>Beckon, to make a Sign</i>
<i>Aunt, a Father's Sister</i>	<i>Beacon, to be fir'd on a Hill</i>
<i>Anchor, of a Ship</i>	<i>Bail, a Surety</i>
<i>Anker, a Runlet</i>	<i>Bale, of Goods</i>
<i>A Peal, of Bells</i>	<i>Bald, without Hair</i>
<i>Appeal, to higher Powers</i>	<i>Barv'd, cry'd out</i>
<i>Appear, to be seen</i>	<i>Ball, to play with</i>

Bawl, to cry aloud
Barbara, a woman's Name,
Barbary, in Africa
Barberry, a Fruit
Bare, naked
Bear, a Beast, or to bear
Bays, of Bay-trees
Baize, Cloth of Colchester
Base, vile
Bas, in Music
Belly, part of the Body
Belie, to speak falsely
Be, they are
Bee, that makes Honey
Beer, to drink
Bier, to carry the dead on
Bell, to ring
Bel, an Idol
Berry, a small Fruit
Bury, the Dead
Blue, a Colour
Blew, as the Wind
Board, a Plank
Bor'd, a Hole
Boar, a Beast
Bore, to make hollow
Boor, a Country Fellow
Bold, confident
Bowl'd, at the Jack
Bolt, the Door
Boult, the Meal
Beau, a Fop
Bow, to bend or the Bow
Bough, of a Tree
Boy, a Lad
Buoy, of an Anchor
Bread, to eat
Bred, brought up
Breeches, to wear
Breaches, broken Places
Bruit, a Report
Brute, Beast
Burrow, for Coney

Borough, a Corporation
By, near
Buy, with Money
Brews, he breweth
Bruise, a Hurt
Brewis, of Fat and Bread
Bus, a fishing Vessel
Buz, the noise of a Fly

C.

Cain, that killed his Brother
Cane, to walk with
Caen in Normandy
Calais, in France
Chalice, a Cup
Call, by Name
Cawl, or Suet
Cannon, a great Gun
Canon, a Rule
Capital, great or chief
Capitol, a Tower in Rome
Career, full Speed
Carrier, of Goods
Cellar, for Liquor,
Seller, that selleth
Censer, for Incense
Censor, a Reformer
Censure, to judge
Centaur, an Herb
Century, a hundred Years
Centry, a Sentinel, a Soldier

on Guard

Char, a Fish
Chair, to sit
Chare, a Jobb of Work
Champaine, Wine of France
Campaign, a wide Field, or

Summer's Expedition

Choler, Rage or Anger
Collar, of the Neck
Coller, of Beef or Brawn
Cieling, of a Room
Sealing, with a Seal

<i>Cittern</i> for Musick	D
<i>Citron</i> a Fruit	<i>Dane</i> , of Denmark
<i>Choir</i> , a Cathedral	<i>Deign</i> , to vouchsafe
<i>Quire</i> , of Paper	<i>Dam</i> , stopping Water
<i>Clerk</i> , a Clergyman	<i>Damn</i> , to condemn
<i>Clerk</i> , of a Parish	<i>Dame</i> , a Mistress
<i>Claufe</i> , part of a Sentence	<i>Dear</i> , of Price
<i>Claws</i> , of a Beast or Bird	<i>Deer</i> , in a park
<i>Coat</i> , a Garment	<i>Deceased</i> , dead
<i>Cote</i> , for sheep	<i>Diseased</i> sick
<i>Comb</i> , for the Hair	<i>Decent</i> , becoming
<i>Come</i> , hither	<i>Dissent</i> , to disagree
<i>Commit</i> , to do	<i>Deep</i> , low in Earth
<i>Comet</i> , a blazing Star	<i>Diep</i> , a Town of France
<i>Common</i> , usual	<i>Defer</i> , to put off
<i>Commune</i> , or converse	<i>Differ</i> , to disagree
<i>Condemn</i> , to Death	<i>Derbe</i> , a City of Asia
<i>Contemn</i> , to despise	<i>Derby</i> , a Town in England
<i>Council</i> , of the King	<i>Desert</i> , Merit
<i>Counsel</i> , Advise	<i>Desart</i> , Wilderness
<i>Course</i> , to be run	<i>Dew</i> , a falling Mist
<i>Coarse</i> , not fine	<i>Due</i> owing
<i>Cornhill</i> , a Street in London	<i>Do</i> , to make
<i>Cornwall</i> a County	<i>Doe</i> , a Female Deer
<i>Cou'd</i> , or could	<i>Dough</i> , paste
<i>Cud</i> , to chew as Beasts	<i>Don</i> , a Spanish Lord
<i>Corrent</i> , a passing or running	<i>Done</i> , acted
Stream	<i>Dun</i> , Colour
<i>Courant</i> , a Messenger or News-	<i>Delphin</i> , a Fish
Paper	<i>Dauphine</i> , the French King's
<i>Currants</i> , Fruit	eldest Son
<i>Crick</i> , in the Neck	<i>Devices</i> , Inventions
<i>Creek</i> , of the Sea or River	<i>Dewizes</i> , a Town in Wiltshire
<i>Cousin</i> , a Relation	<i>Doer</i> , that doeth
<i>Cozen</i> , to cheat	<i>Door</i> , of a House
<i>Cymbal</i> , a Musical Instrument	<i>Dragon</i> a Beast
<i>Symbol</i> , a Mark or sign	<i>Dragoon</i> , a Soldier
<i>Cypress</i> , a Tree	<i>Draught</i> , of Drink
<i>Cyprus</i> , an Island	<i>Dreught</i> Dryness
<i>Cruse</i> for Oil	<i>Delour</i> Grief or pain
<i>Cruise</i> , by the Sea-coast	<i>Dollar</i> , a piece of Money
<i>Cygnat</i> , a young Swan	<i>Demure</i> , sober
<i>Signet</i> , a Seal	<i>Demur</i> ,

Demur a stop or Doubt

D

Ear, of the Head

E'er Ever

Year, twelve Months

Yearly, every Year

Early betimes

Earth the ground

Hearth of the Chimney

Easter the Festival

Esther a Woman's Name

Enter to go in

Inter to bury

Elder not the younger

Eldern, a Tree

Eaten or swallowed

Eaton a Town's Name

Eminent famous

Imminent over Head

Enow in Number

Enough, in Quantity

Earn to deserve

Wool woollen Thread

East the Wind

Yeast used in Bread

Envy, or Hatred

Envoy a Messenger

Exercise Labour or practice

Exorcise to conjure

Err to mistake

Er Brother to Onan, son of

Judah

Extant in being

Extent Distance

F

Fain desirous

Feign to dissemble

Fair beautiful

Fare Victuals

Fain weary

Feint a pretence

Fourth in Number

Forth to go out

Freed to eat

Fee'd rewarded

Fir Wood

Fur or Hair

Felon a Criminal

Fellon a Whitlow

File of steel

Foil put to the worst

Fly as a Bird

Fly an Insect

Fillip with the Fingers

Philip a Man's Name

Flower of the Field

Flour Meal

Floor of a Room

Fellow to come after

Fallow Ground not plough'd

Find to find any thing

Fin'd amerced

Fiend a Devil

Flea off the skin, and also a
Vermin

Flee to escape

Flew did fly

Fowl a Bird

Foul dirty

Francis, a Man's name

Frances, a Woman's name

Frays Quarrels

Fraise pancake with Bacon

Frize a sort of Cloth

Freeze with Cold

G

Gall of a Beast

Gaul France

Garden of Herbs

Guardian an Overseer

Genteel graceful

Gentile a Heathen

Gentle mild

Gesture Carriage

Jester a merry Fellow

C 2

Groat

<i>Groan</i> with Grief	<i>Hail</i> congealed Rain
<i>Grown</i> greater	<i>Hale</i> the Ship
<i>Guilt</i> of Sin	<i>Hall</i> in a House
<i>Gilt</i> with Gold	<i>Haul</i> Pull
<i>Greater</i> Bigger	<i>Heel</i> of the Foot
<i>Grater</i> for Nutmegs	<i>Heal</i> to cure
<i>Grave</i> for the Dead	<i>He'll</i> he will
<i>Greave</i> Armour for the Leg	<i>Higher</i> Taller
<i>Guests</i> to Imagine	<i>Hire</i> Wages
<i>Guest</i> one Entertained	<i>His</i> of him
<i>Gluttonous</i> Greedy	<i>Hiss</i> as a Snake, or to deride
<i>Glutinous</i> Sticking as Pitch	<i>Hear</i> Frost
<i>Great</i> Large	<i>Whore</i> a lewd Woman
<i>Grate</i> for Coals, &c.	<i>Hole</i> Hollowness
<i>Greet</i> to salute	<i>Whole</i> Entire
<i>Graze</i> to eat Grass	<i>Ho!</i> lo! to call
<i>Grays</i> a Town	<i>Hallow</i> to make holy
<i>Groat</i> Four-pence	<i>Hollow</i> having a Cavity
<i>Grot</i> a Cave	<i>Holy</i> Pious
<i>Gallies</i> Ships with Oars	<i>Wholly</i> Entirely
<i>Gallows</i> for Criminals	<i>Holly</i> a Tree
H	<i>Home</i> one's House
<i>Hare</i> in the Fields	<i>Whom?</i> What Man?
<i>Hair</i> of the Head	<i>Holm</i> Holly
<i>Heir</i> to an Estate	<i>Hoop</i> for a Tub
<i>Harsh</i> Severe	<i>Whoop</i> Or ho! ho!
<i>Hash</i> Minced Meat	<i>Hugh</i> a Man's Name
<i>Haven</i> a Harbour	<i>Hue</i> of Colour
<i>Heaven</i> a Place of Happiness	<i>Hew</i> with an Ax
<i>Heart</i> of the Body	I
<i>Hart</i> in the Woods, or an overgrown Buck	<i>I</i> I myself
<i>Herd</i> of Cattle	<i>Eye</i> to see with
<i>Heard</i> Did hear	<i>Idle</i> lazy
<i>Hard</i> not soft or difficult	<i>Idol</i> an Image
<i>Here</i> in this Place	<i>I'll</i> I will
<i>Hear</i> with the Ears	<i>Ile</i> of a Church
<i>High</i> Lofty	<i>Isle</i> an Island
<i>Hie</i> Away, make Haste	<i>Oil</i> of Olives
<i>Hoy</i> A small Ship	<i>Employ</i> in Work
<i>Him</i> that Man	<i>Imply</i> to signify
<i>Hymn</i> a spiritual Song	<i>In</i> Within
	<i>Inn</i> for Travellers
	<i>Intise</i> to stir up

<i>Insight</i> Knowledge	<i>Liturgy</i> Church Service
<i>Ingenious</i> of quick Parts	<i>Lier</i> in wait
<i>Ingenuous</i> candid	<i>Lyar</i> that tells Lies
<i>Iron</i> Metal	<i>Limb</i> a Member
<i>Ironic</i> speaking by contraries	<i>Limn</i> to paint
<i>Itch</i> a Distemper	<i>Line</i> Length
<i>Hitch</i> to catch hold	<i>Loin</i> Veal
K	<i>Liquorish</i> fond of Dainties
<i>Ketch</i> a Ship	<i>Liquorice</i> a Plant, or its Root
<i>Catch</i> to lay hold of	<i>Low</i> humble
<i>Kill</i> to slay	<i>Lo!</i> behold
<i>Kiln</i> for Lime	<i>Lose</i> to suffer Loss
<i>Kind</i> good-natured	<i>Loose</i> to let go
<i>Coin'd</i> Money	<i>Lower</i> to let down
<i>Knave</i> dishonest	<i>Lour</i> a Frown
<i>Nave</i> of a wheel	<i>Loathe</i> to abhor
<i>Knight</i> by Honour	<i>Loth</i> unwilling
<i>Night</i> Darkness	M
<i>Kennel</i> for Dogs	<i>Made</i> finished
<i>Channel</i> for Water	<i>Maid</i> a young Woman
L.	<i>Main</i> Chief
<i>Laid</i> placed	<i>Mane</i> of a Horse
<i>Lade</i> the Water	<i>Male</i> the He
<i>Lane</i> a narrow Street	<i>Mail</i> Armour
<i>Lain</i> did lie	<i>Manner</i> Custom
<i>Latin</i> a Language	<i>Manor</i> a Lordship
<i>Latten</i> Tin	<i>Manure</i> Dung
<i>Ladder</i> to ascend	<i>Market</i> to buy or sell in
<i>Lather</i> made with Soap	<i>Mark</i> note it
<i>Lattice</i> of a Window	<i>Marsh</i> low Ground
<i>Lettice</i> a Woman's Name	<i>Mash</i> for a horse
<i>Lettuce</i> a Sallad	<i>Mesh</i> of a net
<i>Lease</i> of a House	<i>Martin</i> a Man's Name
<i>Leash</i> Three	<i>Marten</i> a Bird
<i>Lees</i> of Wine	<i>Mead</i> a Meadow
<i>Leese</i> an old Word for lose	<i>Mede</i> one of <i>Media</i>
<i>Leaper</i> that jumpeth	<i>Mean</i> of low Value
<i>Leper</i> one leprous	<i>Mein</i> Carriage, or Aspect
<i>Lessen</i> to make less	<i>Meat</i> to eat
<i>Lesson</i> to be read	<i>Meet</i> fit
<i>Least</i> smallest	<i>Mete</i> to measure
<i>Left</i> for fear	<i>Message</i> Business
<i>Lethargy</i> Sleepiness	<i>Messuage</i> a House

Mews for Hawks
Muse to meditate
Mighty powerful
Moiety Half
Mile Measure
Moil Labour
Might Strength
Mite in Cheese
Moat a Ditch
Mote in the Sun
Mean to lament
Mown cut down
More in Quantity
Moor a Black
Mower that moweth
Moor barren Ground
Morter made of Lime
Mortar to pound in
Mole Vermin
Mould to cast in
Muscle a Shell-fish
Muzzle to cover the Mouth

N.

Nay Denial
Neigh as a Horse
Neither none of the Two
Nether lower
New not old
Knew did know
Naught bad
Nought nothing
Nigh near
Nye a Man's Name
Nice curious
Niece a Brother's Daughter
Not denying
Knot to tie
Note Mark
Note of one's Hand
Nose of the Face
Knows understands
No Denial
Know to understand

Neal to harden Glafs
Kneel on the Knees
None not one
Known understood
News Tidings
Noose a Snare

O.

Oar of a Boat
Ore Crude Metal
O'er over
Off cast off
Of belonging to
Our belonging to us
Hour of the Day
Oh! alas!
Owe in Debt
One in Number
Won at play
Own to acknowledge
Order Rule
Ordure Dung

P.

Pair a Couple
Pare cut off
Pear a Fruit
Pain Anguish
Pane of Glafs
Pattin for a Woman
Patent a Grant
Peer a Lord
Pier of Dover
Peter a Man's Name
Petre Salt
Pail for Water
Pale of Countenance.
Pale a Fence
Pall for a Funeral
Paul a Man's Name
Plait the Hair
Plate Metal
Place Room
Plaise a Fish
Parson of the Parish

Person, any Man
Pole for Hops
Pole of the Head
Pool of Water
Pore with the Eyes or of Skin
Poor necessitous
Pallet of the Mouth
Pallet, Bed
Palliate, to cover or hide
Point, a Stop
Pint, Half a quart
Possy, a Noddy
Poesy Poetry
Power Might
Pour as Water
Prey a Booty
Pray, to beseech
Profit Gain
Prophet a Foreteller
Prophecy, a Foretelling
Prophecy to Foretel
Practice Exercise
Practise to exercise
Presence being here
Presents Gifts
Princes the King's Sons
Princesses the King's Daughters
Please to content
Pleas Excuses or Defences
Precedent, an Example
President Chief
Principal Chief
Principle the first Rule

Q.

Quire of Paper
Choir of Singers
Queen the King's Wife
Quean, a Harlot

R.

Rack to torment
Wreck of a Ship
Arrack, strong Liquor

Rain Water
Reign of the King
Rein of a Bridle
Rays of the Sun
Raise lift up
Raisin a Fruit
Reason Argument
Race to run
Rase to demolish
Rice Grain
Rise to get up
Red in Colour
Read the Book
Reed growing in the Water
Relic a Remainder
Relict a Widow
Roe of Fish, or a Deer
Row the boat
Right not wrong
Rite a Ceremony
Write with a Pen
Wright a Wheelwright
Reddish Colour
Radish a Root
Rear set up
Rear behind
Arrear of Rent
Rest Quiet
Wrest to prevent
Roof the top of a House
Ruff for the Neck
Rough not smooth
Rye Corn
Rye a Town in *Sussex*
Wry crooked
Ring the Bells
Wring the Hands
Rime a Fog or Mist
Rhyme Verse
Rind of Cheese
Rode did ride
Road the Highway
Row'd did row

Room

Room part of a House
Rome the Name of a City
Roam to wander
Rheum a Humour
Rote got by Heart
Wrote did write
Wrought did Work

S.

Savour Taste or Smell
Saviour that saves
Satiety Fulness
Society Company
Sheep a Beast
Ship for the Sea
Sight View
Cite to summons
Site Situation
Sail of a Ship
Sale of Goods
Sea the Ocean
See with the Eyes
Seam in a Coat
Seem appear
Seen beheld
Scene in a Play
Seas great Waters
Seize to lay hold of
Cease to leave off
Sent did send
Scent a Smell
Shew to make appear
Shoe for the Foot
Sink sink down
Cinque five
Slight to despise
Slight Neglect
Sleight of Hand
Shoar a Prop
Shore the Sea-coast
Sewer a common Drain
Shown view'd
Shone did shine
Slow not quick

Sloe Fruit
Sew with a Needle
Sue at Law
Sow Seed
So thus
Some a part
Sum of Money
Soul or Spirit
Sole a Fish
Soal of a Shoe
Son of a Father
Sun in the Firmament
Sore painful
Soar aloft
Swore did swear
Sword a Weapon
Soar'd did soar
Stare to look earnest at
Stair a Step
Stile to get over
Style of Writing
Sound, whole, firm; also
 Noise
Swoon, to faint away
Soon quickly
Statue an Image
Statute a Law
Stature Height
Stead in Place
Steed a Horse
Straight not crooked
Strait narrow
Succour Help
Sucker a young Sprig
Spear a Weapon
Sphere a Globe

T.

Then at that Time
Than in comparison,
Tame gentle, not wild
Thame a Town in Oxfordshire
Tear To rend
Tear Of the Eye

Tare An allowance in weight
Tare A Vetch
Tail Of a Beast
Tale A Story
Tiles for the House
Toyls Nets
Toil To labour
There in that Place
Their Of them
Thorough Compleat
Throw A Stone
Throne Of the King
Thrown as a Stone
Tide a flowing Water
Ty'd Made fast
Time of the Day
Thyme an Herb
Team Of Horses
Team with Child
To The Proposition
Too Likewise
Two A Couple
Toe of the Foot
Tow to draw
Tow to be spun
Told As a Story
Toll'd As a Bell
Tour A Journey
Tower Of a Church

V

Vacation Leisure
Vocation A Calling
Veil A Covering
Vale Between two Hills
Vain Foolish
Vein Of the Body
Vane A Weathercock
Value Worth
Valley A Vale
Vial A Glass
Viol A Fiddle

U

Your Of you
Uwer A Bason

Ure Practice
Use Practice
Use To be wont
Ewes Sheep

W.

Wade In the Water
Weigh'd in the Scales
Whale of the Sea
Wail Lament
Waist the Middle
Waste to spend
Wait to stay for
Weight Heaviness
Wear Clothes
Ware Merchandize
Were Was
Where What Place
Weigh To poise
Wey Five Quarters
Whey of Milk
Weal good
Wheat From Scourging
Wield A Sword
Weald Of Suffex or Kent
Wen in the Neck
When At what Time
White Of Colour
Wight An Island
Whore A lewd Woman
Hoar Frost
Witch That conjures
Which Who or What
Whist Silence
Wist Knew
Wood Of Trees
Would or would

Y.

Yea Yes
Ye Yourselfs
Ewe A Sheep
Yew a Tree
You yourself
Yarn made of Wool
Yearn to pity

Of Stops, Marks, and Points, used in Reading and Writing; with their Places and Significations.

THESE are of absolute Necessity; and great Regard ought to be had to them, to avoid Confusion and Misconstruction, and for the better understanding of what we read and write ourselves; and are likewise of Use to others who shall hear us read or see our Writing: They teach us to observe proper Distances of Time, with the necessary raising and falling of the Tone or Voice in Reading, and the needful Stops or Marks to be used in Writing, that we may understand it ourselves, and that our Meaning may not be understood, or misapplied by others.

Stops, or Pauses, considered as Intervals in Reading, are no more than four; though there are other Marks to be taken Notice of, but to other Purposes. The Names of the four Stops are, *Comma*, *Semicolon*, *Colon*, and *Period* or *Full Stop*; and these do bear to one another a Kind of proportional Proportion of Time; for the *Comma* signifies a Stop of leisurely telling one, the *Semicolon* two, the *Colon* three, and the *Period* four—And are made or marked thus:

Comma (,) at the Foot of a Word.

Semicolon (;) a Point over the Comma.

Colon (:) two Points.

Period (.) a single Point at the Foot of a Word.

, *Example of the Comma*) There is not a thing in the World, perhaps, that is more talked of, and less understood, than the Business of a happy Life.

; *Example of the Semicolon*.) It is not a Curse that makes way for a Blessing; the bare Wish is an Injury; the Moderation of *Antigonus* was remarkable.

: *Example of the Colon*) A sound Mind is not to be shaken with little Applause: But Anger is startled at every Accident.

. *Example of the Period*) It is a Shame, says *Fabius* for a Commander to excuse himself, by saying, I was not aware of it. A Cruelty that was only fit for *Marius* to suffer, *Sylla* to command, and *Catiline* to act.

By the Example foregoing, we may easily note, that a *Comma* is a Note of a short Stay between Words in the

Sentence ; and therefore the Tenor of the Voice must still be kept up.—The *Semicolon* is a little longer, and the Tone of the Voice very little abated.—The *Colon* signifies perfect Sense, though not an End of the Sentence ; and the Voice a little abated, or let fall.—The *Period* denotes perfect Sense, and the End of the Sentence.

When the Question is asked, there is a crooked Mark made over the Period, thus ? and is called a Note of Interrogation. *Example*, What could be happier than the State of Mankind, when People lived without either Avarice or Envy ? The Time of Pause for this Stop, is the same with the Semicolon.

! If a sudden Crying-out, or Wondering be expressed, then this Mark is made over the Full Stop, thus ! and called a Note of Admiration, or Exclamation. *Example*, Oh the astonishing Wonders that are in the elementary World !

() If one Sentence be within another, of which it is no Part, then it is placed between two Semicircles or Parentheses, made thus (). *Example*, *Pompey* on the other Side (that hardly ever spake in public without a Blush) had a wonderful Sweetness of Nature. Again : Of Authors be sure to make choice of the best, and (as I said before) to stick close to them. Once more ; Honour thy Father and Mother (which is the first Commandment with Promise) that it may be well with thee.—In reading a Parenthesis, the Tone must be somewhat lower, as a Thing or Matter that comes in by the bye, breaking as it were on the main Coherence of the Period.—The Time is equal to a Comma, and ought to be read pretty quick, lest it detain the Ear too long from the more important Matter.

' *Apostrophe*, is a Comma at the Head of Letters, signifying some Letter or Letters left for quicker Pronunciation, as *I'll* for *I will*, *would'st* for *wouldest*, *shan't* for *shall not*, *ne'er* for *never*, *'tis* for *it is*, *i'th* for *in the*, *o'er* for *over* : Or to denote a Genitive Case ; as *my Father's House*, *my Uncle's Wife*, &c.

Accent is placed over a Vowel, to denote that the Stress or Sound in Pronunciation is on that Syllable.

◌ *Breve*, or crooked Mark over a Vowel signifies it must be sounded short or quick.

• A *Caret* signifies something is wanting, and is placed underneath the Line, just where any thing by Mistake or Forgetfulness, should be brought in.

^ *Circumflex* is of the same Shape with the Caret, but is placed over some Vowel, to shew the Syllable is long.

.. *Dyalysis*, or two Points placed over two Vowels, in a Word signifies they are to be parted, being no Diphthong.

- *Hyphen*, or *Note of Connection*, is a strait Line; which being set at the End of a Line shews that the Syllables of that Word are parted, and the Remainder of it is at the Beginning of the the next Line; and sometimes it is used in Compound Words, as Burnt-sacrifices, Heart-breaking, Soul-healing, Book-keeper, &c. *N. B.* When you have not room to write the whole Word at the End of a Line, but are obliged to finish it at the Beginning of the next, such Words must be truly divided, according the Rules of Spelling; as to *restrain*, not

restrain. When the Hyphen is placed over a Vowel, it is properly a Dash, and signifies the Omission of *m* or *n*; 'tis much used in old *Latin* Authors, and sometimes in *English*, especially in Law Business. *Example*; it is very comendable to write a good Hand.

☞ *Index*, is a Note like a Hand, pointing to something very remarkable.

* *Asterism* or Star, directs to some Remark in the Margin; or at the Foot of the Page. Several of them together denote something defective or immodest in that Passage of the Author.

† *Obelisk* is a Mark like a Dagger, and refers to the Margin, vs the Asterism: And in Dictionaries it signifies the Word to be obsolete, or old, and out of Use.

¶ *Paragraph* denotes a Division, comprehending several Sentences under one Head.

§ *Section*, signifies the Beginning of a new Head or Discourse, and is used in subdividing a Chapter, or Book, into less Parts or Proportions.

[] *Brackets*, or *Crotchets*, generally include a Word or Sentence explanatory of what went before; or Words of the same sense, which may be used in their stead.

“ *Quotation*, or double Comma reverse, is used at the Beginning of the Line, and shews what is quoted from an Author to be his own Words.

Thus much for Pointing, Stops, and Marks, which, if carefully heeded and observed, will add Grace and Credit to your Writing.

Of Abbreviations.

TO be ready in these shews a Dexterity in Writing ; and is very necessary for Dispatch : For by these we expeditiously express, or set down a Word, shortening it by making some initial Letter or Letters, belonging to the Word, to express it as in the Table following :

<i>A.</i> for Answer, or Afternoon	<i>Chron.</i> Chronicles
<i>A. B.</i> Arts Batchelor	<i>Capt.</i> Captain
<i>A. Bp.</i> Archbishop	<i>Clem.</i> Clement
<i>Acct.</i> Account	<i>Col.</i> Colonel
<i>A. D.</i> Anno Domini, Year of our Lord	<i>Cl.</i> Clericus
<i>A. M.</i> Anno Mundi, Year of the World	<i>Co.</i> Country
<i>Admsr.</i> Administrators	<i>Corpn.</i> Corporation
<i>A. M.</i> Artium Magister, Master of Arts	<i>Comrs.</i> Commissioners
<i>Ana.</i> of each alike Quantity	<i>Con.</i> Constance, or Constantine
<i>Ap.</i> April, or Apostle	<i>Conf.</i> Confessor
<i>Adml.</i> Admiral	<i>Cor.</i> Corinthians, or Corollary
<i>Agt.</i> Against	<i>Cr.</i> Creditor
<i>Amt.</i> Amount	<i>C. R.</i> Carolus Rex, or Charles the King
<i>Anab.</i> Anabaptist	<i>C. C. C.</i> Corpus Christi College
<i>Aug.</i> August	<i>C. S.</i> Custos Sigilli, Keeper of the Seal
<i>A. R.</i> Anno Regni, in the Year of the Reign	<i>C. P. S.</i> Custos Privati Sigilli, Keeper of the Privy Seal
<i>Ast. P. G.</i> Astronomy Professor at Gresham College	<i>D.</i> Dean, or Duke
<i>Aust.</i> Austin, or Austria	<i>Dan.</i> Daniel
<i>B. A.</i> Bachelor of Arts	<i>Dr.</i> Doctor or Debtor
<i>B. D.</i> Bachelor of Divinity	<i>Dea.</i> Deacon
<i>B. V.</i> Blessed Virgin	<i>Do.</i> Ditto, or the same
<i>Barr.</i> Baronet	<i>D.</i> Denarii, Pence
<i>Bp.</i> Bishop	<i>Dec.</i> or xber, or iober, December
<i>Cant.</i> Canticles, or Canterbury	<i>Devon.</i> Devonshire
<i>Cat.</i> Catechism	<i>Deut.</i> Deuteronomy
<i>Cha.</i> Charles	<i>Dec.</i> Deceased
<i>Chap.</i> Chapter	<i>D. C.</i> Dean of Christ-Church
<i>Cent.</i> Centum	<i>Doct.</i> Doctrine
<i>Ch.</i> Church	<i>D. D.</i> Doctor of Divinity
<i>Chanc.</i> Chancellor	<i>E.</i> for Earl
	<i>Earld.</i> for Earldom
	D

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<i>Edm.</i> Edmund	<i>Jer.</i> Jeremiah
<i>Edw.</i> Edward	<i>Jes.</i> Jesus
<i>Ex. gr.</i> Exempli gratia, for	<i>Jno.</i> John
Example	<i>Jud.</i> Judges
<i>Engl.</i> England	<i>Is.</i> Isaac
<i>Eliz.</i> Elizabeth	<i>J. D.</i> Jurium Doctor, Doc-
<i>Esa.</i> Esaiiah	tor of Laws
<i>Eph.</i> Ephesians	<i>Jos.</i> Joshua
<i>Eccl.</i> Ecclesiastes	<i>K.</i> King
<i>Ex.</i> Exodus, or Example	<i>Km.</i> Kingdom
<i>Ev.</i> Evangelist	<i>Knt.</i> Knight
<i>Exp.</i> Explanation	<i>L.</i> Lord
<i>Expo.</i> Exposition	<i>l.</i> Liber a Book
<i>Esq.</i> Esquire	<i>L.</i> Librae
<i>Exon.</i> Exeter	<i>Lieut.</i> Lieutenant
<i>Fr.</i> French, or France	<i>Lp.</i> Lordship
<i>Feb.</i> February	<i>Ladyshp.</i> Ladyship
<i>Fra.</i> Francis, or Frances	<i>L. L. D.</i> Legum Doctor,
<i>F. R. S.</i> Fellow of the Royal	Doctor of Laws
Society	<i>Learn.</i> Learning
<i>Gal.</i> Galatians	<i>Lond.</i> London
<i>Gen.</i> Genesis	<i>Lr.</i> Letter
<i>Genmo.</i> Generalissimo	<i>Lam.</i> Lamentations
<i>Geo.</i> George	<i>Lev.</i> Leviticus
<i>G. R.</i> George Rex, George	<i>L. C. J.</i> Lord Chief Justice
the King	<i>M.</i> Marquis, or Monday, or
<i>G. r.</i> Garrison	Morning
<i>Gen.</i> General	<i>Mar.</i> March
<i>Gent.</i> Gentleman	<i>Mat.</i> Matthew
<i>Gosp.</i> Gospel	<i>m.</i> Manipulus, a Handful
<i>Greg.</i> Gregory	<i>M. A.</i> Master of Arts
<i>Hen.</i> Henry	<i>Maty.</i> Majesty
<i>Hamp.</i> Hamper	<i>Md.</i> Madam
<i>Hun.</i> Hundred	<i>Mons.</i> Monsieur
<i>Hum.</i> Humphry	<i>Math.</i> Mathematician
<i>Heb.</i> Hebrews	<i>Mr.</i> Master
<i>i. e.</i> Id est, that is	<i>Mrs.</i> Mistress
<i>I. H. S.</i> Jesus Hominum Sal-	<i>M. D.</i> Medicinæ Doctor,
vator, Jesus Saviour of Men	Doctor of Physic
<i>Ibid.</i> Ibidem, in the same Place	<i>M. S.</i> Memoriae Sacrum, Sa-
<i>Id.</i> Idem, the same	cred to the Memory
<i>Inst.</i> Instant, or Instance	<i>M. S.</i> Manuscript
<i>Ja.</i> James, or Jacob	<i>MSS.</i> Manuscripts [mas
<i>Jan.</i> January	<i>Micb.</i> Michael, or Michael-

<i>Min.</i> Minister	<i>Q.</i> Queen, Query, or Question
<i>N.</i> Note	<i>q.</i> quasi, as it were
<i>Nat.</i> Nathaniel	<i>q. d.</i> quasi dicat, as if he
<i>N. B.</i> Nota Bene, Note, or mark well	should say
<i>Nic.</i> Nicholas, or Nicodemus	<i>q. l.</i> quantum liber, as much
<i>N. S.</i> New Style	as you please
<i>No.</i> Number	<i>q. s.</i> quantum sufficient, a
<i>n. l.</i> Non liquet, it appears not	sufficient Quantity
<i>Nov.</i> or <i>9ber</i> , November	<i>R.</i> Reason
<i>O.</i> Oliver	<i>R.</i> Rex, King ; or, Regina, Queen
<i>Obj.</i> Objection	<i>Revd.</i> Reverend
<i>Obt.</i> Obedient	<i>Rev.</i> Revelation
<i>O. W.</i> Old Word	<i>Rich.</i> Richard
<i>O. S.</i> Old Style	<i>Robt.</i> Robert
<i>Oct.</i> or <i>8ber</i> , October	<i>Rog.</i> Roger
<i>Oxon.</i> Oxford	<i>Ret.</i> Return
<i>P.</i> Paul, Paulus, Publius, or President	<i>Reg. Prof.</i> Regius Professor
<i>Pugil.</i> a Handful	<i>Rom.</i> Romans
<i>Pen.</i> Penelope	<i>Rt. Honble.</i> Right Honoura- ble
<i>Pd.</i> Paid	<i>Rt. Worpl.</i> Right Worshipful
<i>Par.</i> Parish	<i>St.</i> Saint
<i>P per.</i> or by	<i>Sam.</i> Samuel
<i>Pat.</i> Patience, or Patrick	<i>Seç.</i> Section
<i>Per C.</i> Per Centum, by the Hundred	<i>Sept.</i> or <i>7ber</i> , September
<i>Parl.</i> Parliament	<i>Serj.</i> Serjeant
<i>Pet.</i> Peter	<i>Servt.</i> Servant
<i>Phil.</i> Philippians, or Philip	<i>Shr.</i> Shire
<i>Philo Math.</i> Philo-Mathe- maticus, a Lover of the Mathematics	<i>Salop.</i> Shropshire
<i>P. M. G.</i> Professor of Music at Gresham College	<i>Sol.</i> Solution
<i>Prof. Tb. G.</i> Professor of Di- vinity at Gresham College	<i>Staff.</i> Stafford
<i>Prif.</i> Priscilla	<i>Sp.</i> Spain, or Spanish
<i>Pr.</i> Priest, or Prince	<i>Sr.</i> Sir
<i>Pf.</i> Psalm	<i>ſ.</i> Semissis, half a Pound
<i>P S.</i> Postscript	<i>S. S. T. P.</i> A Professor, or Doctor of Divinity
<i>Penult.</i> last save one	<i>Stew.</i> Steward
	<i>Tbo.</i> Thomas
	<i>Theſſ.</i> Theſſalonians
	<i>Tbc.</i> Theophilus
	<i>To.</i> Tobias
	<i>V.</i> Virgin, or Verse
	<i>D 2</i>
	<i>U.</i> Use

<i>U.</i> Use		<i>W. R.</i> William Rex
<i>Ult.</i>	} the last	<i>wn.</i> when
<i>Ultimus.</i>		<i>Xn.</i> Christian
<i>Vid.</i> see		<i>Xt.</i> Christ
<i>Ven.</i> Venerable		<i>Xtopher.</i> Christopher
<i>Viz.</i> Videlicet, to wit, or		<i>ye.</i> the
that is to say		<i>yn.</i> then
<i>V. gr.</i> Verbi Gratia, for		<i>ym.</i> them
Example		<i>yt.</i> that
<i>Wal.</i> Walter		<i>y.</i> your
<i>Wm.</i> William		<i>Et.</i> et, and
<i>Wp.</i> Worship		<i>Et c.</i> et cetera, and the rest,
<i>Wpl.</i> Worshipful		or, and so forth.

And now having finished my Directions concerning Spelling, Pointing, &c. I shall proceed to give some instructions in relation to the most useful Art of Writing.

When any Person has thoroughly acquainted himself with Spelling, and understands good *English*, &c. the next Step necessary is the acquiring of the accomplishing Air of fair Writing, to put this Spelling into Practice: In order thereto, I shall endeavour to give such Directions, and proper Instructions, as may duly qualify any Person therein.

First, and principally, there must be a fixed Desire and inclination imprinted on the Mind for its Attainment: For I myself had never acquired or arrived to any Proficiency in it, if I had not had a strong Desire and Inclination to it; arising from being convinced of its excellent Use in Trade, and all Manner of Business, according to the Verse:

*Great was his Genius, most sublime his Thought,
That first fair Writing to Perfection brought, &c.*

Next to the Desire, there must be added a steady Resolution to go through with it till it is gained; and by a diligent and indefatigable Application, overcome all seeming Difficulties that may arise in the Progress of its Attainment, agreeable to Distich;

*By frequent Use, Experience gains its Growth;
But Knowledge flies from Laziness and Sloth.*

DIRECTIONS to BEGINNERS in
WRITING.

FIRST, it is necessary to be provided with the following Implements, *viz.* good and free Ink, and also good Paper, when arrived to commendable Performances; likewise a flat Ruler for Sureness; and a round one for Dispatch; with a leaden Plummet or Pencil to rule Lines: Also Gum Sandrick Powder (or Pounce, as they call it,) with a little Cotton dipp'd therein, which rub gently over the Paper to make it bear Ink the better; particularly when soft Hands are to be written, such as Text, &c. and especially when you are obliged to scratch out a Word or Letter: for then there will be a Necessity for its Use; and rubbing the Place with the Pounce, smooth it with the Haft of the Penknife, or clean Paper, and then you may write what is proper in the same Place. The Implements are summed in these Lines:

*A Penknife, Razor-Metal, Quills good Store;
Gum-Sandrick Powder to pounce Paper o'er;
Ink, shining black, Paper more white than Snow,
Round and flat Rulers on your self bestow.
With willing Mind, these, and industrious Hand,
Will make this Art your Servant at Command.*

To hold the Pen.

THE Pen must be held somewhat sloping, with the Thumb and the two Fingers next to it; the Ball of the Middle-finger must be kept strait, just against the upper Part of the Cut or Cradle, to keep the Pen steady: The Fore-finger lying strait on the middle Finger; and the Thumb must be fixed a little higher than the End of the Fore-finger, bending in the Joint: and the Pen be so placed to be held easily without griping. The Elbow must be drawn towards the Body, but not too close. You must support your Hand by leaning on the Table-edge, resting on it half Way between your Wrist and Elbow, not suffering the Ball, or fleshy Part of your Hand to touch the Paper; but resting your Hand on the End of your little Finger, that and your fourth Finger bending inwards, and supported on the Table as above-said. So fixed, and sitting pretty upright, not leaning your Breast against the Table, proceed to the making the small *a*, and *n*, *c*, *e*, *i*, *m*, *r*, *f*, *w*, and *x*; which must all be made of equal

Bigness and Height : the Distance or Width betwixt the two Strokes of the *n*, must be the same with the Distance or Width of the three Strokes of the *m*, the same Proportion or Width must be observed in the *u*, *w*, and *o*. The Letters with Stems, or Heads, must be of equal Height ; as the *b*, *d*, *f*, *h*, *k*, *l*, and *j*. And those with Tails must be of equal Depth, as the *s*, *g*, *p*, *q*, and *r*. The Capitals must bear the same Proportion to one another, in Respect to Bigness and Height ; as *A*, *B*, *C*, *D*, *E*, *F*, *G*, *H*, and *I*, &c. This Proportion of Letters, both of Small and Great, must be observed in, and will serve for, all Hands whatsoever.—*N. B.* That all upright Strokes, and those leaning to the left Hand, must be fine, or Hair-strokes, and all downright Strokes must be fuller or blacker. And when you are in joining, where Letters will naturally join, without any Straining, take not off the Pen in Writing, especially in Running or mixed Hand. Care likewise must be duly taken, that there be an equal distance between Letter and Letter, and also between Word and Word. The Distance between Word and Word may be the Space the small *m* takes up ; but between Letter and Letter not quite so much. Sit not long at Writing, (that is, not longer than you improve) especially at the first, lest it weary you, and you grow tired of learning. Imitate the best Examples, and have a constant eye at your Copy ; and be not ambitious of writing fast, before you can write well ; Expedition will naturally follow, after you have gained a Habit of writing fair and free ; and 'tis much more commendable to be an Hour in writing six Lines well, than to be able to write sixty Lines in the same Time, which perhaps will be altogether unintelligible. And besides, by a slow and fair Procedure, you will learn in half the Time ; and therefore 'tis a vain Thought in a Learner to desire to be quick before he hath acquired Experience, and a Freedom of writing by frequent Practice. If you have Cotton in your Ink, look well that there be no Hairs at the Nib of your Pen. Never over-charge your Pen with Ink, but shake what is too much into the Ink again.

How to make a Pen.

THIS is gained sooner by Experience and Observation from others that can make a Pen well, than by verbal Directions. But *Note*, that those Quills called Seconds are the best, as being hard, long and round in the Barrel ; and
before

before you begin to cut the Quill, scrape off the superfluous Scurf with the Back of your Penknife ; scrape most on the Back of your Quill, that the Slit may be the finer, and without Gander's Teeth (as the Roughness in the Slit is by some called.) After you have scraped the Quill as aforesaid, cut the Quill at the End, half through on the back Part ; and then turning up the Belly, cut the other Half, or Part, quite through, *viz.* about a Quarter or almost half an Inch, at the End of the Quill, which will then appear forked : Then enter the Penknife a little in the back Notch, and then putting the Peg of the Penknife-haft, (or the End of another Quill into the back Notch, holding your Thumb pretty hard on the back of the Quill as you intend the Slit to be) with a sudden or quick twitch, force up the Slit ; it must be sudden and smart that the Slit may be clearer : Then by several Cuts on each Side bring the Quill into equal Shape or Form on both Sides ; and having brought it to a fine Point, place the Inside of the Nib on the Nail of your Thumb, and enter the Knife at the Extremity of the Nib, and cut it through a little sloping : Then with an almost downright Cut of the Knife, cut off the Nib ; and then by other Cuts finish the Pen, bringing it into a handsome Shape, and proper Form. But meddle not with the Nib again, by giving it any Trimming or fine Cuts, for that causes a Roughness, and spoils it : But if you do, to bring the Nib the evenner, you must nib it again, as above directed. *Note*, that the Breath of the Nib must be proportioned to the Breadth of the Body, or downright black Strokes of the Letters, in whatsoever Hand you write, whether Small or Text. *Note also*, That in your sitting to write, you place yourself directly before a fore-right Light, or else to have it on your left hand, (which I esteem best) but by no Means to have the Light on your right hand, because the Shadow of your Writing-hand will obstruct your Sight.

Thus far for Direction. Now for Application. I have here set Copies of the most usual, fashionable, and commendable Hands for Business ; with Alphabets of great and small Letters proper to each. Be sure you make your Letters well (both Small and Great) before you proceed to Joining. Be careful in imitation, and observe the foregoing Directions, and without Doubt you will gain your End. Command of Hand, or the Art of striking Letters, &c. is gained by frequently practising good Examples.

A B C D E F G H I J K L M N O P Q

R S T U V W X Y Z Æ

a b c d e f g h i j k l m n o p q r f

s t u v w x y z.

Note, 'Tis necessary for all those who would qualify themselves for Business, often to imitate this
Print Hand; to make clean Marks on Bales, or plain Directions on Parcels.

Copies in Alphabetical Order.

A

A R T is gained by great Labour and Industry.
A covetous Man, is always as he fancies in Want.
Add to your Faith Virtue, and to Virtue Knowledge.
A blind Man's Wife needs no Painting.
A comely Countenance is silent Commendation.
A Place of ill Example may endanger a good Man.
A prudent Man values Content more than Riches.
A virtuous Mind is rather to be chosen than Promotion.
A fair Piece of Writing is a speaking Picture.
All worldly Things run a continual Round.
Authority is the main Point in Government.
All God's Commandments are divinely pure.
A Man's Manners commonly form his Fortune.
A great Liar is seldom believed though he speaks Truth.
All evil Things and vain, strive ever to refrain.
A virtuous-minded Youth, will ever love the Truth.
A prudent Youth and Wife, will not Advice despise.
All you that would write well, strive others to excel.
Abundance ruins some, but Want makes all to moan.
Amendment still should shine, in all and every Line.
A greater Loss can't be, than that of Liberty.
A good and virtuous Lad, will shun whate'er is bad.
Affectation renders the fairest Face disagreeable.
All Idleness avoid, for by it most are destroy'd.
All idle lazy Boys, obstruct their Parent's Joys.
A Man by Conduct may keep away Misery.
All Mishap hath been occasioned by Sin.
Avoid th' Occasion still, of running into Ill.
A Youth that would transcend, must ever mind to mend.
A Lad that would excel, must mind his Copy well.

B

Beauty is commendable in some, but it ruins others.
By a commendable Deportment we gain Reputation.
By Delight and some Care, we come to write fair.
By Diligence and Industry we come to Preferment.
Beauty without Virtue is but a painted Sepulchre.
Beauty commands some, but Money all Men.
By constant Amendment we rise to preferment.
Brave Men will do nothing unbecoming themselves.

to make clean Marks on Bales, or plain Directions on Parcels.

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Be wise and beware ; of blotting take Care.
 Bounty is more commended than imitated.
 By Iniquity and Sin, Misfortunes enter in.
 By Idleness and Play, Youth squander Time away.
 Barren are those Joys, we waste away in Toys.
 Blest are their Joys above, who do their Time improve.
 Badness brings all Sadness, therefore follow Goodness.
 By trusting to To-morrow, Men plunge themselves in Sorrow.

C

Contentment is preferable to Riches and Honour.
 Can they be counted wise, who counsel do despise ?
 Care mixed with Delight, will bring us soon to write.
 Consider the Shortness of Life, and Certainty of Death.
 Contentment is a Gem, beyond a Diadem.
 Competency with Content is a great Happiness.
 Contention and Strife, make uneasy our Life.
 Courtiers receive Presents in a Morning, and forget 'em by Night.

Caution and Care, oft baffle a Snare.
 Contentment makes a Man happy without a Fortune.
 Censure no Man, nor detract from any Man.

D

Deride not Infirmities, nor triumph over Injuries.
 Delight and some Care, will make you write fair.
 Delight in virtuous Ways, and then you'll merit Praise.
 Death conquers potent Princes, and their Powers.
 Delight in what you undertake to learn.
 Duty, Fear and Love, we owe to God above.
 Death is before the old Man's Face, and may be at the young Man's Back.
 Death only can declare, what Dust the Bodies of all Mortals are
 Drinking is the drowning of Cares, not the curing of them.
 Death destroys not the Soul, but an ill Life does.
 Do to others as you would, that they unto you should.
 Delay is the Remora of all good Success.
 Deprive no Person of his lawful Due, lest they should do the same by you.
 Delight and Pleasure's but a golden Dream.
 Death is less fear'd by a Fool than a Philosopher.

E

Endless Joys have those, whose Sins are vanquish'd Foes.
 Every Plant and Flower, shews to us God's Power.
 Example oft doth rule the wise Man and the Fool:

Examples oft prevail, when Arguments do fail.
Every idle Thought, to Judgment must be brought.
Every Sluggard is the Cause of his own Misfortune.
Envious Men they fret, when they see others get.
Evil Company makes the good bad, and the bad worse.
Experience is the best Looking Glass of Wisdom.
Even at Head and Feet, be sure your Letters keep.
Endeavour to do well, and then you may excel.
Every Man is right, that mixes profit with Delight.
Evil Men and fly, take care how you come nigh.
Envy and Care, make the Body grow spare.
Every money'd Man, hath others to command.

F

Fair Words are often used to hide foul Deeds.
Fair Faces have sometimes foul Conditions.
Few do good with what they have gotten ill.
Future Events must be left to Providence.
Fools are rul'd by their Humour, but wise Men by Interest.
Firm keep your Mind, on Things that are sublime.
Fear is a good Watchman, but a bad Defender.
Faith and Hope are both dead when divided.
Fortune is kind at some Times to all.
Feign'd Looks oft hide what the false Heart doth know.
Fortune and Fame create a good Name.
Fate will still have ; a kind Chance for the Brave.
Fraud in Childhood will become Knavery in Manhood.
Fear without Hope turns to Despair.
Friends in Adversity are not often found.
Fools and Knaves are not Companions for honest Men.
Frugality and Industry are the Hands of Fortune.

G

Godliness with Contentment is great Gain.
Good Manners in a Lad, will make his Parents glad.
Great Minds and small Means ruins many Men.
Good Manners, Grace, and Truth, are Ornaments in Youth.
Good Men, as well as bad, have sometimes Fortunes sad.
Great Good you sure will find, if you are well inclin'd.
Good Humour hath never-failing Graces.
God's Works only are perfect in their kind.
Gluttony would ransack *Noah's* ark for the Riot of a Meal.
Grief nourish'd in your Breast, will never let you rest.
Greater Profit doth always come of Learning than of Play.
Great Men, though they should, are not always good.
Good Men are safe, when wicked Ones are at odds.

48 *The Young Man's best Companion.*

Get what you get honestly, and use it frugally.
God is Omnipotent, true, and Almighty.

H

Hasty Resolutions are seldom fortunate.
Haste makes Waste of Paper, Ink, and Time.
He that stumbles and falls not, mends his Pace.
Honour and Renown will the Ingenious crown.
Hypocrites first cheat the World, and at last themselves.
Human Life will Human Frailties have.
Honour that is true, 'tis lawful to pursue.
He that sends a Fool on an Errand, ought to follow him.
Honours are Burdens, and Riches have Wings.
He is a wise Security who secures himself.
He that sins against Conscience, sins with a Witness.
Honour the hoary Head, that Virtue's Path doth tread.
Happy are their Joys, who turn away from Toys.
Hours fly swift away, improve each Moment of the Day.
He that swims in Sin, must sink in Sorrow.
He that fears not an Oath, will not tremble at a Lie.
He hath his Work half done, that hath it well begun.

I

Instruction and a good Education are a durable Portion.
Ignorance is the greatest Enemy to Learning.
In praising sparing be, and blame most sparingly.
Imaginary Toys, do please some idle Boys.
Intemperance is attended by Diseases, and Idleness by Want.
It is good to have a Friend, but bad to need him.
Idleness and Sloth, interrupt Learning's growth.
Innocency need not fear the Lion, nor the rugged Bear.
It is better to be unborn than untaught.
It's too late to spare, when the Bottom is bare.
Idleness hath no Advocate, but many Friends.
Improvement of Parts is by Improvement of Time.
If you'd win a Pen of Gold, first learn well the Pen to hold.
It's the Work of an Age to repair the Misconduct of an Hour.

K

Keep a close Mouth, if you'd have a wise Head.
Kings, as well as mean Men, must die.
Kings may command, and subjects must obey.
Kingdoms and Crowns must in the Dust be laid.
Knowledge sublime, is gained by much Time.
Keep at a Distance from Company that's ill.
Keep good Decorum in your Words and Deeds.
Keep close your Intention, for fear of Prevention.

Kings may win Crowns, but cannot conquer Death.
Keep Faith with all men, and have a Care of a Lye.
Keep good company, if you'd Keep a good Name.
Knowledge, if abus'd, is like a Gem ill-us'd.
Kingdoms bring Care, and Crowns are heavy Things to wear
Keep out evil Thoughts, by entertaining good ones.
Kind Actions neglected, make Friendship suspected.
Keep safe good Counsel, and entertain not ill Advice.
Kindle not Passion's Fire, it burns with dreadful Ire.

L

Learn to live as you would wish to die.
Love and Honour will bear no rivals.
Learn to unlearn what you have learn'd amiss.
Learn now in Time of Youth, to follow Grace and Truth
Liberty is grateful to all, but destructive to many.
Lying is the Duty of none, but the Custom of many.
Learning do but love, and then you will improve.
Liberality without discretion, becomes Profuseness.
Let no Jest intrude upon good Manners.
Learn now in youthful Prime, to husband well your Time.
Learn how to make as well as use a Pen.
Liberality should have no object but the Poor.
Lost opportunities are seldom, if ever recovered.
Let not the Work of To-day be put off till To-morrow.
Laugh not out of Measure, nor out of Season.

M

Monuments of Learning are most durable.
Many know good, but do not the Good they know.
Make use of Time, now whilst you're in your Prime.
Money commonly corrupts both Church and State.
Many think not of dying, 'till they can live no longer.
Many have repented talking, few of being silent.
Many have much to learn, but a short Time to live.
Measure not goodness by good Words only.
Marriage is out of Season, if we are either too Young or
Modesty has more Charms than Beauty. (too Old.
Most precious Time esteem, which no one can redeem.
Many live Beggars all their Lives, that they may not die so.
Money makes some Men mad, many merry, but few sad.
Many are led by the Ears more than the Understanding.
Most precious Things are still possess'd with Fear.
Many are made Saints on Earth that never reach Heaven.
Malice seldom wants a mark to shoot at.

E

Misfortune is the Touchstone of Friendship.
 Make no Friendship with an angry Man.
 Many Things happen between the Cup and the Lip.
 Mend your manners, and that will mend your Fortune.
 Many want Help, that have not the Face to ask it.
 Momentary and Vain, is all earthly Gain.

N

Nothing is constant in this uncertain World
 Necessity is commonly the Mother of invention.
 Next to a good Conscience prefer a good name.
 None so high can be, as no Mishap to see.
 Nothing is so difficult but diligence may overcome.
 No Task's too hard, when Heaven's the Reward.
 None can lay himself under an Obligation to do ill.
 Never lament or weep, for Loss of what you cannot keep.
 Noise and Talk without some Rule, do indicate the Man a
 (Fool.

Nature seldom changes with the Climate.
 Never study to please others, if thereby you ruin yourself.
 Nature's eldest Law we find, is that we to ourselves be kind.

O

Opportunity neglected, brings severe Repentance.
 On present Time depends our future State.
 Of all Prodigality, that of Time's the worst.
 Of what gives most Delight, we soonest lose the Sight.
 Omitting to do good is to commit Evil.
 Orators are more solicitous to speak *well* than to do so.
 Our Life here is but a Journey to the next World.
 Our Sand doth run apace, and soon we end our Race.
 Our Minds must be cultivated as well as our Plants.
 Other Peoples Death should be Remembrances of our own.
 Our early care should be, to live most piously.
 Our time of Life is call'd a Span, by which observe how
 (frail is Man.

One Vice is more expensive than ten Virtues.

P

Provide against the worst, and hope for the best.
 Poor Men want many Things, but covetous Men all.
 Patience and Time run through the roughest Day.
 Put to your Tongue a Bridle, that it talk not idle.
 Pain, Disgrace, and Poverty have frightful Looks.
 Prayers and Provinder hinder no Man's Journey.
 Put not off the main Business of Life, to very the Article
 Pain we can count, but Pleasure steals away. [of Death

Poor Freedom is better than rich Slavery.
Pursue useful and profitable Studies.
Passion and Partiality govern in too many Cases.
Perfection in this World is Virtue; and in the next Know
(ledge.

Q

Quick Promisers are commonly slow Performers.
Quietness and Content, are Mates most excellent.
Qualify exorbitant Passions with Quietness and Patience.
Quiet Men have quiet Minds, and enjoy Content,
Quicken Learning with Alacrity and Delight.
Quarelsome Persons often meet with their Match.
Quarrels are more easily began than ended.
Quietness is secure, but Rashness is dangerous.
Quietly learn to bear a Cross; if we repine, tis to our Loss
Questions in Jest no serious Answers need.
Quench Passion's Heat, don't suffer it to reign.
Quantity with some is what they'd hit; bnt quality prevails
(with Men of Wit.

R

Remember your Duty to God, your Neighbour, and your-
Repentance comes too late, when all is consumed. (self.
Reason should always guide, and o'er our A&t preside.
Reputation should be the darling of human Affections.
Rest continued long, makes Idleness grow strong.
Rely on Virtue more than Blood.
Repent To-day, To-morrow may be too late.
Reputation is like a glass, when crack'd it cannot be mended
Reputation is gained by many Actions, and lost by one.
Remember Death, and do not forget Judgment.
Religion in Hypocrites is but Skin deep.
Relations and Friends, pursue their own Ends.
Religion is best understood when most practis'd.
Riches serve a wise Man, and rule a Fool.
Run no great Risque for 'Vantage small, tho' some for Mo-
ney hazard all.
Revenge is a Pleasure only to a mean Spirit.
Righteous Mens Prayers will be regarded.
Repentance is a quite forsaking Sin; but he repents not
[that remains therein.
Resolve to amend, and pursue't to your End.
Review the Time you have mispent; think upon it, and
[lament.

S

Sin and Sorrow are inseparable Companions.
 Self-Love is the greatest Flatterer in the World.
 Some had rather discharge a Reckoning than pay a Debt.
 Sin is the certain Cause of Misfortune.
 Study to live quiet, and to do your own Business.
 Some in their Zeal are hot, but Knowledge they have not.
 Set Bounds to Zeal by Discretion.
 Silence is the Sanctuary of Prudence and Discretion,
 Sloth is an Argument of a mean degenerate Mind.
 Short, and therefore vain, is all earthly Gain.
 Soft Words sometimes work upon the proudest Heart.
 Sleep and Idleness are enemies to Learning.
 Sin is the Cause of Shame, who love it are to blame.
 Small Means and large Minds ruin many Men.
 Short are all Extremes, whether of Good or Ill.
 Spend Time in good Duties, and Treasure in good Works.
 Some go fine and brave, finely to play the Knave.
 Six Feet of Earth, end all Distinctions of our Birth.
 Some must die that others may live, said the Grave-Digger.
 Silly People are commonly pleas'd with silly Things.
 Some are full of oral Sanctity, and mental Impiety.
 Small Profit comes from all ungodly Gain.

T

Train up a Child in the Practice of Love and good Manners
 The End of Mirth is many Times the Beginning of Sorrow
 Time is so swift of Foot that none can overtake it,
 Time passeth swift away, no Mortal can make it stay.
 Time passeth swift away, improve therefore each Day.
 The doing nothing; is very near doing Evil.
 Those that won't mend To-day, shall have more Work To-
 [morrow.
 The Borrower is a Slave to the Lender; and the Security a
 [Slave to both.
 Trust is the strongest Band of human Society.
 The Endowments of the Mind ought not to be confin'd.
 Truth may be blamed, but cannot be ashamed.
 The City cares not what the Country thinks.
 To do good is the Way to find it.
 'Tis just so much time lost as is idly spent
 There is no such Thing in Nature as Perfection.
 Time, Tide, and Carriers will for no Man stay.
 The Unfortunate are insulted by every Rascal.
 'Tis inhuman to sport with another's Infirmitie.

V

Vanity makes Beauty contemptible.
Vain and transitory is all worldly Glory
Virtue and Fortune work Wonders in the World.
Value more a good Conscience than great Fame.
Unwilling go to Law, and unwillingly make an End.
Understanding a Thing is half doing it.
Variety is the Happiness of Life.
Virtuous and brave Actions gain Reputation.
Use soft Words and hard Arguments.
Virtue is commended by all, but followed by few.
Unthankfulness is the Cause of the Earth's Unfruitfulness.
Vain Conceitedness is ridiculed by all.
Virtue is seldom a Match for Power.
Understand Things not by their Form, but Quality,
Virtue all commend, but few do it attend.
Union and Peace make Discord to cease.
Valour and Greatness are preferr'd before Neatness.
Vain and foolish Things, Disreputation brings.

W

What is more vain than public Light to shun.
Wisdom is more valuable than Riches.
What pleases God, must be, none alters his Decree.
We are many Times deceived with the bare shew of Good.
Women and Wine, tho' they smile, they make Men pine.
When fortune knocks, be sure to open the Door.
Wine is a Turn-coat ; first a Friend, then an Enemy.
What is violent is seldom permanent.
When good Cheer is lacking, our Friend will be packing.
Wise Men keep their Expences short of their income.
We keep a better Account of our Money than our Time.
Wickedness in Jest turns to Wickedness in Earnest.
We must not blame Fortune for our own Faults.
Where Knavery is in Credit, Honesty is put out of Countenance.
We must look to Time past, to improve what's to come.
What is fixed in our Hearts is seldom out of our Heads.
Wickedness comes by Degrees, as well as Virtue.
Would you be rich, be industrious ; if wise, be studious.

X

Xenophon was a great Captain, as well as a great Philosopher
Xerxes wept at the Thoughts that his vast Army would be
[dead in 100 Years.
Xerxes whipt the Sea because it would not obey his Command.

Xenophon accounted the wife Man happy

Xenophilus lived without Sicknefs one hundred and seven
[Years.

X'amples of the best for ever mind, and imitate in kind.

Xerxes wept at the changeable State of man.

'Xamine well how you improve, for that will be as you
[your Learning love.

'Xercise will much Improvement gain.

'Xperience is the Mistrefs of all Arts and Sciences.

'Xcel in what you can, and strive to lead the van

'Xpress your Desire to learn by your Diligence.

Y

Youth is full of Disorder, and Age of Infirmary.

Young Men lament your minutes mispent.

Your Time improve, and squander it not away.

Your Spelling mind, and Sense of what you write.

Yield quietly to what must come unavoidably.

Young Men in Strength should provide against Age and
[Weakness.

Youth in their Prime, should manage well their Time.

Youth to the Grave do go, as well the Aged do:

Yield yourself Servant to Righteousness and to Holiness.

Your Copy mind, write fair, and of Blotting beware.

Your Care should appear, by writing most fair.

Your Delight and your Care will make you write fair.

Z

Zeal in a good Cause, will merit Applause.

Zeal mixt with Love, is as harmless as a Dove.

Zealously strive with Emulation to write.

Zeal without Knowledge is but religious Wild-fire,

Zeal, if not rightly directed, is very pernicious.

Zealously bend amain, fair writing to obtain.

Zeno was the first of the Stoic Philosophers.

Zaccheus he was low, but yet his Faith wa'n't so.

Short Lines for Text Hand.

Abandon whatsoever is ill—Be wise betimes.

Care destroys the Body—Do the Things that are just

Expect to receive as you give—Frequent good Company.

Give what you give cheerfully—Have good Men in Esteem

Imitate that which is good—Keep God's Commandments

Learn to be wise—Make a right Use of Time

Nothing get, nothing have—Observe Modesty

A B C D E F G H I J K L M N
O P Q R S T U V X Y Z

A a B b C c D d E e F f G g H h I i J j K k L l M m
N n O o P p Q q R r S s T t U u V v X x Y y Z z.

fear God and Honour His King.

An easy Copy for Round Hand

A B C D E F G H I J K L M N

O P Q R S T U V W X Y Z

a b c d e f g h i k l m n o p q r s
t u v w x y z dec. 1 2 3 4 5 6 7 8 9 10.

Take great care and you'll write fair.

Pleasures are very short—Pains are very long.
Quit all Revenge—Quiet your Passions.
Recompence a good Turn—Repent of your Sins.
Silence gives Consent—Sin very little
Time is more precious than Gold—Turn from your Sins
Use moderate Pleasure—Use not bad Company
Vain are some Pleasures—Vice is detestable
Wisdom is the principal Thing—Wise men are scarce
Yesterday cannot be recalled—You cannot take too much
Xenophon, Xenocrates,—Xeno, and Xenobia. [Care.]

Double Lines in Verse.

All that in fair Writing would excel,
How much you write regard not, but how well,
Bear your Pen lightly, keep a steady hand,
And that's the Way fair Writing to command.
Carefully mend in each succeeding Line,
For that's the Way to reach to what is fine.
Descending Strokes are dark but upwards small,
Even at head and Feet keep Letters all.
From Blots keep clean your Book, and always mind
To have your Letters all one Way inclin'd.
Grace every Letter with perfect, full and small,
And keep a due Proportion in them all.
Hold your Pen lightly, gripe it not too hard;
And with due Care your Copy well regard.
Join every Letter to its next with Care,
And let your Strokes be admirably fair.
Keep a light hand, and smoothly glide along;
Ascending fine, downright strokes are strong.
Let graceful Beauty in each Line appear,
And see the Front doth not excel the Rear.
Majestic Grace both beautiful and strong.
Doth, or else ought to every Line belong.
No Roughness at the Edge should e'er be seen,
But all the Letters should be smooth and clean.
On Care depends the Beauty of each Line
For that alone will make your Art to shine.
Praise is deserved by the careful Hand,
But for the unthinking doth Correction stand.
Quit yourself nobly with a prudent Care,
Of clumsy writing and of Blots beware.
Remember strictly what the Art enjoins,
Equal-siz'd Letters, and as equal Lines.
Small Letters must of equal Height be seen;

The fame of great, both beautifully clean.
 Time and Delight's will easy make Task !
 Delight, Delight's the only Thing I ask !
 Vain are the Hopes of those who think to gain
 This noble Treasure without taking Pain.
 Whilst idle Drones, supinely dream of Fame,
 The Industrious actually do get the same.
 'Xemplar Lines are Writing's surest Law,
 Precepts may lead us, but Examples draw.
 Youth is the Time for Progress in all arts ;
 Then use your Youth to gain the noblest Parts.
 Zeal for attainment of each Art will prove
 One means of purchasing the general Love.

Since good Ink is necessary to good Writing, I shall give a Receipt or two for making some of the best black Ink in the World, which is as follows, *viz.*

A Receipt for making black Ink.

TO six Quarts of Rain, or River Water, (but rain Water is the best) put one Pound and a Half of fresh blue Galls of *Aleppo*, for those of *Smyrna* are not strong enough) bruised pretty small ; 8 Ounces of Copperas, clean, rocky, and green ; also 8 Ounces of clean, bright, and clear Gum Arabic ; and 2 Ounces of Roche Allum: Let these stand together in a large stone Bottle, or clean stone Pot, or earthen Pot, with a narrow Mouth to keep it free from Dust ; shake roll, or stir it well, once every Day, and you will have an excellent Ink in about a Month's Time ; and the older it grows, the better it will be for Use.

Ingredients for a Quart.

One Quart of Water, 4 Ounces of Galls, 2 Ounces of Copperas, and 2 Ounces of Gum, mixed and stirred as above.

☞ If you soake the green Peeling of *Walnuts* (at the Time of the Year when pretty ripe) and Oak Saw-Dust, or small Chips of Oak, in Rain Water, and stir it pretty often for a Fortnight: The Water strained off and used with the same Ingredients as above, will render the Ink still stronger and better.

How to make Red Ink.

TAKE three Pints of stale Beer, (rather than Vinegar) and 4 Ounces of ground Brazil Wood ; simmer them together for an Hour ; then strain it thro' a Flannel, and bottle it up, (well stop'd) for Use.

Or you may dissolve half an Ounce of Gum Senega, or

Arabic, in half a Pint of Water ; then put a Pennyworth of Vermillion into a small Gallipot, and pour some of the Gum-water to it, stir it well, and mix it together with a Hair Pencil, to a proper Consistency ; but it will not incorporate presently, tho' by the next Day it will ; then having a clean Pen, dip it into the Ink, having first well stirred it with a Pencil, and then you may use it: It is a smart and curious Red, tho' not so free as the other. And after the same Manner you may make any other coloured Ink, as Blue, Green, Yellow, Purple, having divers Gallipots for that Use. In like Manner you may mix the Shell Gold for curious Occasions ; pouring two or three Drops according to direction, into the Shell, and mix it well with a clean Hair Pencil, and with it put a little into a clean Pen, &c. The small Shells may be bought at some Fan-sellers or Fan-painters, at two or three for Two-pence : or the large ones, which are the best, at the Colour-Shops, at Six-pence a-piece.

To keep Ink from freezing or Moulding.

IN hard frosty Weather, Ink will be apt to freeze ; which if once it doth, it will be good for nothing ; it takes away all its Blackness and Beauty. To prevent which (if you have not the Conveniency of keeping it warm, or from the cold) put a few Drops of Brandy, or other Spirits into it, and it will not freeze. And to hinder its moulding, put a little Salt therein.

Familiar Letters on several Occasions, and on various Subjects.

BEFORE we enter upon Arithmetic, it may be proper to give some Examples of Letters on various Subjects, and upon divers Occasions : which Letters frequently read over, and sometimes copied, may be a good Introduction to a handsome Style, and commendable Manner of Writing ; besides the Help and Use they may be of in noting and observing the Method of Spelling good English, and Orthographically placing Great Letters or Capitals, where they ought to be ; and also in imprinting in the Mind the due Notion of Points, Stops &c, and when and where to be made.

Letters are variously worded, and ought properly to express the Desires, Thoughts, &c. of the Writer to the Reader, that thereby the Receiver of the Letter may fully understand, and be justly informed of the Occasions, Wants, or Intentions of the Sender.

Letters being wrote on divers Subjects, and on sundry Occasions, they may be ranked under these Denominations, or several Heads following, viz. *Letters of proffered Assistance, of Thanks, of Excuse, of Reproof, of Advice or Counsel, of Recommendation, of Remonstrance, of Business, and of Amusement: Letters, Consolatory, Congratulatory, and Exhortory; also familiar and mixed Letters, containing various Subjects.*

I shall not have Room to touch upon every one of these particularly; but I shall give sundry examples promiscuously as follows: viz.

A Letter from a Son to his Father.

Honoured Father.

AS I have not had a Letter from you since your Favor of the 8th of October last, which I answered by the next Post, I take this Opportunity of enquiring after your Health, and that of my Sister. I have herewith sent you, Sir by *Samuel Simple*, the *Pempsey* Carrier, a *Spaniel Dog*, called *Troy*; who is an excellent good one of his kind, and fit for the Sport of your Place; is very free for the Water; and if he has a Fault, it is being a little too eager; but he is young, and may be brought to what you please to have him. Pray give my Love to my Sister, and be pleased to accept of my Duty to yourself, who am.

London, Dec. 6.

1774.

*Sir, your most dutiful Son,
and humble Servant,*

Anthony Addlehill.

The Answer.

Dear Son,

Pempsey 28th of Xber, 1771.

I Received your Letter the 6th Instant, and thank you for enquiring after my Health, which, I thank God, I perfectly enjoy at present, as I wish and hope you do your's. I received your Present of the Dog, but the poor Cur was almost starved, (having as I suppose) had nothing on the Road; but he is now in good Condition, and hath been tried as to his Mettle, which I find to be good. I have sent you by the Carrier half a Dozen of Wild Ducks, which *Troy* fetch'd when I had shot them. Your Sister remembers her Love to you, and hath sent you a Turkey and a Chine of Bacon, to which I wish you and your Friends (if you invite any) a good Stomach.—My Prayers to God, for your Prosperity, temporal and eternal, are constantly offered up, by

Your loving Father,

Andrew Addlehill.

P. S. We have a great many Wild Fowl in our *Level*, so that you may expect another present of that kind in a little Time.

Note. *The Letters P. S. signify Postscript ; which Name is given to any Thing which is (like the above four Lines) wrote below the Body of a letter.*

A Letter from a young Man to his Uncle.

Honoured Uncle.

THE many kind and courteous Things that you have done for me, oblige me, in Point of Gratitude, as well as Duty, (as an Opportunity now offers itself) to make a Tender to you of my poor, but real and hearty Service, in the affair between you and Mr. *A. B.* of this Place, and if you'll please but to communicate to me your Intentions, and give me your Directions therein, I will execute them with all Punctuality ; and will from Time to time, give you an exact Account of my Proceedings therein : Therefore in Expectations of your Commands, I remain.

*Norwich, Dec. 7,
1774.*

*Sir, your most obliged Nephew,
and very humble Servant,*

Brian Bing.

The Uncle's Answer.

Nephew,

London, December 12, 1774.

I Take the Offer of your Service in the Business between me and Mr. *A. B.* of your City very kindly, and think none fitter to adjust that affair than yourself ; but I am unwilling to go to Law, and had rather, much rather, that you would endeavour to bring him to any reasonable Accommodation ; for in such Contests the Winner is commonly a Loser in the End : Therefore, if you can bring him to any reasonable Terms, I shall be very glad : You understand the Affair, and I shall commit it wholly to your discreet and good Management, being persuaded, you'll do for me as for yourself ; in which Opinion I remain,

Your loving and affectionate Uncle.

Bazil Bing.

*From a Niece to her Aunt.**Madam.*

THE Trouble I have already given you puts me to the Blush, when I think of intruding again on your Goodness; but Necessity, which obliges us to such Actions as are contrary to our Inclination, is the Motive that induces me to be thus troublesome now. Pray, dear Madam, excuse me, if I once more beg your Assistance, which I do not doubt but you very well know I stand greatly in Need of, at this Time; and I shall ever have a grateful Remembrance of your Goodness to me; and hope I shall be, one Time or other, in a Capacity of making some Return for many Obligations your Goodness hath conferred upon me,

*London, May 6,**Your most respectful Niece.**1776.**and very humble Servant,**Penelope Pinch.**A Letter of professed Assistance to a Friend.**Dear Friend,*

I Should be false to true Friendship, if I should neglect or cast of my Friend in adversity, I have heard that you are under some Misfortune, and at present need my Assistance, I therefore send you these Lines for your Consolation, desiring you to bear up against your ill Luck, with as much Presence of Mind as you can, for assure yourself, I shall suddenly follow this Epistle in Person, and come, I hope, opportunely enough for your Assistance; 'till which Time, take Courage and be assured you shall not be disappointed of timely Assistance, from dear Friend,

*Yours, in Reality,**Timothy Timely.**A Brother to a Sister.**Dear Sister,*

MY great Distance and long Absence from you (tho' I have not wanted good Company) makes me very solicitous concerning your Welfare; natural Affection inclines me strongly to have you in Remembrance, tendering your

Health and Welfare in every Respect as dear as my own ; and there is nothing at my Command, but, if you request, it shall be freely yours. Notwithstanding the Distance, I purpose, (God willing) to make you a Visit very shortly, and had done it before now, but an urgent Occasion interposed, the Particulars of which being too long for a Letter, I shall acquaint you with when I see you. Pray give my due Respects to all Friends, particularly to honest Mr. J B. and so in Expectation of finding you all well at my Arrival, I conclude,

London, May 6,
1778.

Dear Sister,

Your affectionate Brother,
and humble Servant,
Henry Hearty.

From a Youth at School to his Parents.

Honoured Father and Mother,

I Received your kind Letter of the 4th of November last, and also the several Things therein mentioned, by the *Chichest* Carrier, for which I return you my most humble and hearty Thanks, they coming very seasonably to the Relief of my Necessities.—I endeavour to make the best Improvement in my Learning that I possibly can (though at first it seemed a little irksome and hard) and I hope to gain the Point at last, for which you sent me hither. Pray, dear Parents, accept of my most humble Duty to yourselves, and kind Love to my Brothers and Sisters, and to my quondom *Playfellows*, particularly to *Jacky Finglebrains*, and tell him I hope by this Time he begins to be a little serious. I am,

London, May 7,
1778.

Honoured Parents,
Your dutiful Son and humble Servant,
Stephen Studious.

Another.

Honoured Sir,

I Am very much obliged to you for all your Favours ; all I have to hope is, that the Progress I make in my Learning will be no disagreeable Return for the same: Gratitude, Duty, and a View to future Advantages, all conspire to make me fully sensible how much I ought to labour for my own Improvement, and your Satisfaction, in order to shew myself, upon all Occasions, to be

Eaton School, May 8, 1778.

Your most obedient Son,
Daniel Diligent.

A Letter of Recommendation.

S I R,
THE Bearer hereof, *Francis Faithful*, I send to you as one whose Honesty you may rely on; and my Experience of his Conduct and Fidelity gives me a certain kind of Confidence in recommending him to you; for you know me, Sir, and I believe you cannot in the least think, that I would recommend any one to you, of whose Probity I had the least Shadow of Doubt or Suspicion. I am with due Respect,

6 May, 1778.

Sir, your real Friend,

and humble Servant,

George Generous.

A Letter of Thanks.

S I R,
I Received your Favour, with the kind Present that accompanied it: I have no other Way of expressing my Gratitude at present, than by my hearty Thanks; every Thing you do has a peculiar Excellence, and the Manner of doing it is as agreeable as the Action itself: But I must stop, lest I should offend that Delicacy, which I would commend, and which is constantly admired by,

10 May, 1778.

Sir, your most obliged and

most humble Servant,

George Grateful.

To a Country Chapman.

Mr. Francis Fairdealer,

S I R,
YOU and I have formerly had Trading together, and it is not my Fault that we do not continue so to do; for assure yourself, I have a great Value and Respect for you, and on that Account none shall be more ready to oblige you in what I may; therefore pray let us once more re-assume our Dealings together; and you shall find, that for any Goods you have Occasion for in my Way, none shall use you more kindly than, Sir,

Your real Friend and Servant,

Titus Tradewell.

A Letter of Congratulation.

S I R,
AS I am perfectly sincere in the Professions of Friendship which I have constantly made to you, you will certainly believe

believe that I am sensibly rejoiced at your late good Fortune ; as your Merit gave me Occasion to foresee it long before it happened, so I was not at all surpris'd on hearing thereof ; I heartily wish you greater Success, and beg you will always continue me in the Number of those whom you permit to subscribe themselves, as I do now, Sir,

London, April 2,
1778.

*Your most obedient and
most faithful Servant,*
Ralph Real.

A Letter of Enquiry of Health.

Hammer Smith, 9th of May, 1778.

S I R,

NOT hearing from you in such a Length of Time, as from the 11th of *June* last, I am concerned, lest Sickneſs or ſome other Accident hath happened to you, or to ſome one of your Family ; my Uneaſineſs occaſions my giving you this Trouble, and I wiſh that I may find Things with you better than my Fears ſuggeſt : however be pleas'd to let me know the Certainty with all convenient Speed ; and thereby you'll very much oblige,

Sir,

*Your real Friend,
and very humble Servant,*
Peter Pitiful.

A Letter by way of Petition to a Friend.

Honoured Sir,

I Am uncertain whether my Misfortunes have come to your knowledge : however I muſt humbly preſume on your Good-nature, being aſſured of ſundry Examples of your Compaſſion, that you *will* think of and take Pity on the Diſtreſſed ; therefore, as an Object truly deſerving Compaſſion, I moſt humbly implore and petition you to conſider the many Loſſes and Diſappointments that I have lately met with, which have reduced me to ſuch neceſſitous Circumſtances, that I cannot poſſibly proceed in my Affairs : You was pleas'd once to ſtyle me your Friend, and I was indeed : And ſo I would moſt certainly be now, and ſhew it by a ſignal Proof of Kindneſs, if our Circumſtances were changed, by ſtanding between you and Miſfortune, and ſcreening you from the Contempt incident to Poverty and Diſtreſs. I doubt not, Sir, but your Generoſity and Goodneſs is al

64 *The Young Man's best Companion.*

great ; and I hope, with all Humility, you will be pleased to interpose your good Offices between Ruin and, Sir,

Your very humble Servant,

Laurence Luckless.

A Letter of Friendship.

Dear Friend,

IT is now a long Time (as I account it) since you and I have had any mutual Converse by Letter, which to me is a great Unhappiness ; and really, if Distance did not somewhat excuse, I should be apt to tax you with Unkindness ; but however, perhaps you may not have the same Conveniency of Writing at your Place (for Want of Postage) as we have at ours, and on that Account, I shall not insist on it as an Infringement of Friendship, the chief Purport of this being to inquire of your Welfare, and to have an Answer given to, Sir,

Your real Friend,

and very humble Servant,

Kendrick Kindly.

A Letter of Kindness.

S I R,

YOUR's of the 25th ult. is now before me ; in Answer to which, I positively declare, That Mr. *A. B.* hath not been with me, to present the Bill of Exchange that you mention in your Letter of Advice to me, and therefore there can be no just Cause of Protest, or any other Charge, put on,

London, June 1,

1778.

Sir,

Your humble Servant,

John Innocent.

It is proper to know how to subscribe, and how to direct, as it is to write a Letter.

S U P E R S C R I P T I O N S.

To the King's most excellent Majesty.

To the Queen's most excellent Majesty, &c.

To the Prince, To his Royal Highness, &c.

To the Princess, To her Royal Highness, &c.

To Archbishops.

To his Grace the Lord Archbishop of Canterbury; or,

To the most Reverend Father in God, &c.

To Bishops.

To the Right Reverend Father in God, &c.

To

To Deacons, Archdeacons, &c.

To the Reverend A. B. D. D. Dean of, &c.

To the Inferior Clergy.

To the Reverend Mr. A. or To the Reverend Doctor, &c.

To the great Officers of State.

To the Right Honourable R. Lord H. Lord High Chancellor of Great-Britain—Lord President of the Council—Lord Privy Seal—One of his Majesty's principal Secretaries of State, &c.

To Temporal Lords.

To his Grace the Duke of, &c. To the most Honourable the Marquiss of, &c. To the Right Honourable the Earl of, &c. To the Right Honourable the Lord Viscount, &c. To the Right Honourable the Lord, &c.

The eldest Sons of Dukes, Marquisses, and Earls, enjoy, by the Courtesy of England, the second Title belonging to their Father; thus the eldest Son of the Duke of Bedford is called Marquiss of Tavistock; of the Duke of Grafton, Earl of Euston; of the Earl of Macclesfield, Lord Viscount Parker, &c. and their Daughters are called Ladies, with the Addition of their Christian and Surnames thus: Lady Carolina Russel, Lady Augusta Fitzroy, Lady Betty Parker, &c.

The younger Sons of Dukes are in like Manner called Lords; and those of Marquisses and Earls, together with all the Children of Viscounts and Barons, are stiled Honourable.

To a Baronet, Honourable; To a Knight, Right Worshipful, and to an Esquire, Worshipful.—Every Privy Counsellor, tho' not a Nobleman, hath the Title of Right Honourable.—All Ambassadors have the Stile of Excellency, as hath also the Lord Lieutenant of Ireland, and the Captain General of his Majesty's Forces. The Lord Mayor of London, during his Mayoralty, hath the Title of Right Honourable. And the Sheriffs, during that Office, have the Title of Right Worshipful. All Mayors of Corporations have the Title of Esquires, during their Office.

For the Beginning of Letters.

To the King; Sir, or, May it please your Majesty.

To the Queen; Madam, or May it please your Majesty.

To the Prince; Sir, or, May it please your Royal Highness.

To the Princess; Madam, or, May it please your Royal Highness.

To a Duke; My Lord Duke, or, May it please your Grace.

To a Duchess; Madam, or, May it please your Grace.

To an Archbishop; May it please your Grace.

To a Marquis ; *My Lord*, or *may it please your Lordship*,
 To a Marchioness ; *Madam*, or, *May it please your Ladyship*,
 To an Earl, Viscount, or Baron ; *My Lord*, or, *may it please your Lordship*,

To their Consorts ; *Madam*, or, *May it please your Ladyship*,

To a Bishop ; *My Lord*, or, *May it please your Lordship*,

To a Knight ; *Sir*, or, *May it please your Worship*,

To his Lady ; *Madam*, or, *May it please your Ladyship*,

To a Mayor, Justice of Peace, Esquire, &c. *Sir*, or, *May it please your Worship*,

To the Clergy ; *Reverend Sir* ; *Mr. Dean* ; *Mr. Archdeacon*, *Sir*, &c. as Circumstances may require.

At subscribing your Name, conclude with the same Title you began with ; as, *my Lord*, *your Lordship's*, &c.

To either House of Parliament, and to Commissioners, Bodies corporate.

To the Right Honourable the Lords Spiritual and Temporal in Parliament assembled.

To the Honourable the Knights, Citizens, and Burgeſſes, in Parliament assembled.

To the Right Honourable the Lords Commissioners of the Treasury, or, Admiralty.

To the Honourable the Commissioners of his Majesty's Customs, Revenue of the Excise, &c.

To the Right Worshipful the Governors of Christ's Hospital, London.

To the Master, Wardens, and Court of Assistants of the Worshipful Company of Drapers.

Of secret Writing.

HERE it may not be improper to say something of Secret Writing ; to which Bishop *Wilkins*, in his Book of *Mathematical Magic*, speaks largely ; but it is principally concerning writing in Cypher, which requires great Pains, and an uncommon share of Ingenuity, both in Writers and Readers. But however I shall shew two or three particular Ways, that are very pretty and amusing, and also very easy both as to cost and pains. And,

First, If you dip your Pen in the Juice of a Lemon, or of an Onion or in your own Urine, or in Spirits of Vitriol, and write on clean Paper whatever you intend, it shall not be discerned till you hold it to the Fire, and it will appear legible. And if with any of the forementioned, you write

on

on your Skin, as on your Arm, and Back of your Hand, &c. it shall not be seen till you burn a Piece of Paper, and with the Ashes rub on the Place, and then it will appear very plain.—And this I have experienced and tried, and therefore can say *Probatum est.*

Another Way is, when you write a Letter that you intend shall not be discovered, but those you think fit; first to write your Thoughts on one Side the Letter with black Ink as usual, (but it ought to be on thin Paper) and then, on the contrary side, go over the said Matter that you would have secret, with a clean Pen dipped in Milk, and that Writing shall not be read without holding it to the Fire as mentioned above, and then it will appear legible in a bluish Colour.

A third Method is, to have two Pieces of Paper of equal Size, and the uppermost cut in chequered Holes or Squares, big enough to contain any Word of six or seven Syllables, and in those Squares write your Mind in regular Sense; and then take off the said chequered Paper, and fill up the Vacancies with Words of any Kind, which will render it perfect Nonsense, and not capable of being read, to any Purpose of Intelligence. And transmit or send the said uppermost, or chequered Paper, or another exactly of the same Form to your Correspondent, whereby he shall, by laying it nicely on your said Letter, read your intended Sense, without being perplexed with the Word of Amusement intermixed, which make it altogether unintelligible.

Or again, you may write to your Friend in proper Sense with common Ink, and let the Lines be at so commodious a Distance, that what you intend to be secret may be written between them with Water, wherein Galls have been steeped a little Time, but not long enough to tincture the Water; and when dry, nothing of the Writing between the said Lines can be seen; but when it is to be read, you must, with a fine Hair Pencil dipped in Copperas-water go between the said Lines, and so you make it legible.

Note. This Way will give no Ground for Suspicion, because the Letter seemeth to carry proper Sense in those Lines that are set at a proper Distance.

OF ARITHMETICK.

AFTER Writing, the next necessary Step towards qualifying a person for Business, is the understanding that

that truly laudable and most excellent Accomplishment, the noble Science of Arithmetic, a Knowledge so necessary in all the parts of Life and Business, that scarce any Thing is done without it.

In my Directions for its Attainment, I shall proceed with such plainness of Method, and Familiarity of Stile, as shall render it easy to be understood, and conspicuous to the meanest Capacity.

And first of *Notation* and *Numeration*:

In *Notation* we must note or observe, that all Numbers are expressed by, or composed of, these ten Figures, or Characters following, *viz.*

One Two Three Four Five Six Seven Eight Nine Cypher.

1 2 3 4 5 6 7 8 9 0

Nine of these are called significant Figures, to distinguish them from the *Cypher*, which of itself signifies nothing; but as it is placed in whole Numbers, serves to increase the Value of the next Figure or Figures that stand before it; as 3 is but Three; but before the Cypher, thus 30, the 3 becomes Thirty, &c. But in Decimal Fractions, 0 decreases the Value of Figures behind it, for, there, 3 is three-tenths of any thing: but by placing 0 before it, thus, 03 it is decreased from three tenth Parts to 3 hundred Parts of any Thing, &c.—We are to note, That every one, or any of the abovementioned nine Figures, or Digits, have two Values; one certain, and another uncertain; the certain Value is, when it stands alone by itself; the uncertain is, when joined or placed with other Figures or Cyphers; for when any one of these Figures stand alone, they signify no more than their own simple Value; as 5 is but five, 4 but 4, 6 but six and 3 no more than Three, &c. And this is the certain Value of a Figure; But when another Figure or Cypher is annexed, they then are increased in their value ten Times; as 5 or 5 Units or Ones, to 5 Tens, or Fifty: 4 to 4 Tens, or Forty; 6 to 6 Tens, or Sixty; and 3 to 3 Tens or Thirty; as thus, 51, Fifty-one; 42, Forty-two; 63, Sixty three; 34, Thirty-four, &c. Again, if any of the said Figures stand in the third Place towards the Left-hand they signify so many Hundreds as they expressed Units or Ones; as 500 is Five Hundreds, 400, Four Hundreds, 600, Six Hundreds, and 300, Three Hundreds, &c. If any of them possesses the 4th Place towards the Left-hand, they are so many Thousands, as they contain Units; and so any

any or every Figure increases by a Ten fold Proportion, from the Right-hand to the Left, according to the place it is found in; so that 5 may be either Five or Fifty; Five Hundred, or Five Thousand: In the first Place 5; in the second 50; in the third 500; in the fourth Place, 5000, &c. The true Value of Figures in Conjunction, may be fully learnt and understood by the following Table.

The Numeration Table.

12	C	Thousf. of M.	11	X	Thousf. of M.	10	Thousf. of Mil.	9	C	of Millions	8	Tens of Millions	7	Millions	6	C	of Thousf.	5	Tens of Thousf.	4	Thousands	3	Hundreds	2	Tens	1	Units	Thousf. of Millions	Millions	Thousands	Units of Ones.
1	2	3	4	5	6	7	8	9	0	1	2																				
	1	2	3	4	5	6	7	8	9	0	1																				
		1	2	3	4	5	6	7	8	9	0																				
			1	2	3	4	5	6	7	8	9																				
				1	2	3	4	5	6	7	8																				
					1	2	3	4	5	6	7																				
						1	2	3	4	5	6																				
							1	2	3	4	5																				
								1	2	3	4																				
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For the easier Reading of any Number, first get the Words at the Head of the Table by-heart; Units, Tens, Hundreds, Thousands, &c. and apply them thus, 75, five Units, Five; and 7 Tens, Seventy: that is Seventy five. Again, 678; 8 Units, Eight; 7 Tens, Seventy; and 6 Hundred, six Hundred; that is Six Hundred Seventy-eight. Once more, 3456; Units, six; 5 Tens, Fifty; 4 Hundreds, Four Hundreds; 3 Thousands, Three Thousands; together Three Thousands, Four hundred, Fifty-six The 4th Line of the Table, viz. 123456789, may be read thus: One hundred twenty-three Millions, four hundred fifty six Thousands, seven hundred eighty-nine. But the Manner of reading any Number may be rendered more intelligible by Stops, thus; make a Comma after every third Figure or Cypher, beginning at the right hand, and so on towards the Left, thereby distinguishing

ing every third Place into Hundreds, as Hundreds of Units, Hundreds of Thousands, Hundreds of Millions, and Hundred Thousands of Millions, &c. And for Trial, let's read the first Line of the Table; where the last place in Valuation is Hundred-thousands of Millions, and being pointed in Periods, will stand thus, 123,456,789,012; and is to be read thus, One hundred twenty-three Thousands, four hundred fifty-six Millions, seven hundred and eighty-nine Thousands (no hundreds) and twelve. Again, the following Number, viz. 276,245,678,921,460; is to be read thus, 276 Million of Millions, 245 Thousands of Millions, 678 Millions, 921 Thousands, 460 Units or Ones; that is, two hundred and Seventy-six Millions of Millions, two hundred forty-five Thousands, six hundred seventy-eight Millions, nine hundred twenty-two thousands four hundred and sixty. The foregoing *Table of Numeration* is on the right Hand distinguished into such Periods, for the easier reading thereof; and the like is frequently done in the Public Offices; and by Men of Business.

Numbers to be read or written, viz.

96, *Ninety-six,*
 242, *Two hundred forty-two,*
 7924, *Seven thousand 9 hundred 24,*
 54006, *Fifty-four thousand and six,*
 524707, *Five hundred 24 thousand 707,*
 4706240, *Four millions 706 thousands 240,*
 62700472, *Sixty-two millions 700 thousand 472,*
 474960204, *Four hundred 74 millions 960 thousands 204,*
 4214007042, *Four thousand 214 millions 7 thousand 42,*
 44214800240, *Forty-four thousands 214 millions 8 hundred thousands 240.*

Of Numerical Letters.

Numbers were anciently expressed by Letters; and it is necessary to understand them, for the readier reading the Dates of Years, frequently used in the Title-pages of Books, on Funeral Monuments, in Roman History, &c.

I signifies One

V Five

X Ten

L Fifty

C An Hundred

CC Two Hundred,

IIIIIIII Five Hundred Thousand.

CCCCCIIIIIIII Ten Hundred Thousand or a Million.

M,D,CC,LXXIX, expresses the

D or 10 Five hundred
M or 100 A Thousand,
100 Five Thousand,
CC100 Ten Thousand,
1000 Fifty Thousand,
CCCC10000 A Hundred
Thousand.

the present Date of 1779. M
being one Thousand, D Five
Hundred, CC Two Hun-
dred, and LXXIX, Seven-
ty-nine; together One Thou-
sand Seven Hundred and
Seventy-nine.

When a Letter of inferior Value stands after one of su-
perior, its Value is to be added thereto; thus VI. VII,
and VIII, signify Six, Seven, and Eight; but when a Let-
ter of inferior Value is placed before one of superior, then
its Value is to be taken therefrom, thus, IV, IX, XL,
and XC, signify Four, Nine, Forty, and Ninety.

A D D I T I O N.

IS the putting together two or more Numbers or Sums,
so as their total Value may be discovered or known.

Herein we must always observe to set the Numbers to be
added, orderly one under the other; that is Units under
Units, Tens under Tens, Hundreds under Hundreds, &c.
as in the subsequent Examples.

Addition of Numbers of one Denomination.

Yards.
T.U.

Gallons.
H. T U.

Pounds.
X of
Th. Th. H. T. U.

2 4
4 2
6 8
8 6
2 4
4 2

2 8 6

7 5 6
4 3 2
5 7 8
6 9 6
4 2 2
6 7 8

3 5 6 2

5 7 9 6 2
3 9 7 4 4
6 7 2 2 2
7 9 6 7 4
2 4 9 2
3 9 0

2 4 7 4 8 4

In Addition of simple Numbers, whether it be *Yards*,
Gallons, *Pounds*, or any thing else, remember to carry 1
for every 10 that you find in the Right-hand, Row, or
Rank of Figures, being Units to the next Row of Tens to
the Row of Hundreds, &c. and whatever it makes in the
last Row, you must set down, amount to what it will.

The

The Numbers above are set down in Order, as before directed; that is, Units under Units, Tens under Tens, &c. as may be plainly understood, by being indicated at the Head of each Row, or Rank, by U. T. H. &c. signifying Units, Tens, Hundreds, &c. Then in casting up each Example to know its Total, I begin at the Right-hand, or Unit's Rank, of the first Example, and say 2 and 4 is 6, and 6 is 12, and 8 is 20, and 2 is 22, and 4 is 26; in which Row there are two tens and six over, wherefore I set down 6 just under its own Rank, and carry 2 to the next Row, and say, 2 that I carry, and 4 makes 6, and 2 is 8, and 8 is 16, and 6 is 22, and 4 is 26, and 2 is 28; and this being the last Row, I set down the Amount, viz. 26; so that the total Number of Yards is found to be 286. And the amount of the next or 2d Example is found by the same Method to be 3562 Gallons. And in the third and last Way to be 247484. And so the Total of any other Example of the same kind, viz. simple Numbers of one Denomination may be found. *Note*, That when any of the Ranks amount to just 10, 20, 30, 40, 50, &c. then you must set down the 0 under its proper Rank, and carry either 1, 2, 3, 4, or 5, according to the Number of Tens that you find, to the next Row.

And so much for *Addition of Numbers of one Denomination*, which never varies from what has been said above; observing strictly to keep to the critical, and nicely setting down in perpendicular Order your several Numbers, that Units may precisely and directly stand under Units, Tens under Tens, &c. as hath been fully declared before. The next in Order of Course, is *Addition of Numbers of several Denominations; Addition of Money.*

In *England or Great Britain*, Accounts are kept in Pounds, Shillings, Pence, and Parts of a Penny; so you are to note,

4 Farthings make 1 Penny,
12 Pence 1 Shilling, and
20 Shillings 1 Pound.

In adding of these you are with the same Punctuality to mind, that Pounds be set directly under Pounds, Shillings under Shillings, Pence under Pence, Farthings under Farthings; as in the Examples hereafter following.

But before you proceed, it will be necessary to have the following Tables by heart, for the readier Remembrance of
how

how many Shillings there are in a Number of Pence, and how many Pounds are contained in a Number of Shillings, &c.

Note, that *l.* stands for Pounds, *s.* for Shillings, *d.* for Pence, and *qr.* for Farthings, those being the initial Letters of *Libra*, *Solidus*, *Denarius*, and *Quadrans*, Latin Words of the same Signification.

<i>Pence</i>	<i>s.</i>	<i>d.</i>
20 is	1	8
30	2	6
40	3	4
50	4	2
60	5	0
70	5	10
80	6	8
90	7	6
100	8	4
110	9	2
120	10	0

<i>s.</i>	<i>l.</i>	<i>d.</i>
20 is	1	0
30	1	10
40	2	0
50	2	10
60	3	0
70	3	10
80	4	0
90	4	10
100	5	0
110	5	10
120	6	0

The use of these Tables is this: whenever you are casting up any Sum of Money, you begin at the Right-hand (as before in Sums of one Denomination) suppose at the Place of Pence, then if the Rank, Row, or Denomination of Pence, amounts from the Bottom to the Top, to 56; your Table of Pence tells you, that 50*d.* is 4*s.* and 2*d.* to which adding 6*d.* the Sum is 4*s.* 8*d.* If to 92*d.* the table tells you, that 90*d.* is 7*s.* 6*d.* which with 2*d.* over is 7*s.* 8*d.* And if to 81*d.* the table shews that 80*d.* is 6*s.* 8*d.* and 1*d.* more makes 6*s.* 9*d.*

The Shilling Table serves to lead you to a quick Recollection, how many Pounds there are to so many Shillings; as admit the Rank of Shillings arises to 57*s.* the table says, that 50*s.* is 2*l.* 10*s.* and 7*s.* over make 2*l.* 17*s.* If to 84*s.* the table declares, that 80*s.* is just 4*l.* and 4*s.* over, make 4*l.* 4*s.* If to 112*s.* the table tells that 100*s.* is 5*l.* and 12*s.* more make 5*l.* 12*s.* &c.



Addition of Money.

Money owing and Money received as follows.

(1)		(2)	
Owing to	Mr. Andrews	4	12 6
	Mr. Bent	7	06 9
	Mr. Crawley	4	12 0
	Mr. Dupper	6	17 7
	Mr. Ealin	5	06 6
	Mr. Franklin	4	12 3
	Mr. Gregory	6	00 0
	Mr. Fisher	5	15 4
		Rec. for	
		Tobacco	46 10 9
		Sugar	79 16 0
		Indigo	42 18 3
		Broad Cloth	66 12 4
		Canary	90 16 0
		Port Wine	84 07 6
		Rice	24 12 0
		Logwood	60 10 0

I begin with the Right-hand Rank, that is the Pence in the Example of Money owing, and say 4 and 3 is 7 and 6 is 13 and 7 is 20, and 9 is 29, and 6 makes 35 Pence; now 30 Pence according to the Table, is 2s. 6d. and 5d. more make 2s. and 11d. I set down 11 exactly under the Rank of Pence and say 2s that I carry (which I do to the Rank of Shillings and 5 is 7, and 2 is 9, (for I take first only the Units Rank of Shillings) and 6 is 15, and 7 makes 22, and 2 is 24, and 6 is 30, and 2 makes 32: and being come to the Top of the Sum, and it making 32 I come down with the Tens of Shillings, saying 32 and 10 is 42, and 10 is 52, and 10 is 62, and 10 is 72, and 10 makes 82 Shillings; and the Table telling me that 80 Shillings is 4 Pounds, I know therefore 82s. is 4l. 2s. wherefore I set down the odd 2s. just under the Row of Shillings, and carry 4 Pounds to the Pounds; saying 4 that I carry and 5 is 9, and 6 is 15, and 4 is 19, and 5 is 24, and 6 is 30, and 4 is 34, and 7 is 41, and 4 makes 45 Pounds; so that the total of those several Sums of Money, due to the several Persons amount to 45l. 2s. 11d. In

In the Example of Money received, I begin at the Right-hand Rank as before, and say, 6 and 4 is 10, and 3 is 13, and 9 makes 22, and 22 Pence being 1s. and 10d. I set down 10 and carry 1s. to the Shillings; saying 1 that I carry and 2 is 3, and 7 is 10, and 6 is 16, and 2 is 18, and 8 is 26, and 6 makes 32; then I come down with the Tens, saying 32 and 10 makes 42 &c. and find at the Bottom it comes to 102 Shillings which makes 5*l.* 2*s.* I set down 2*s.* and carry 5*l.* to the Pounds; saying 5 that I carry and 4 is 9, &c. I find that at the Top it amounts to 36, wherefore I set down 6 exactly under its own Rank, viz. the Rank of Units of Pounds, and carry 3 for the 3 Tens that are in 30, for at all times in the Addition of the Left-hand Denomination, whether, it be Money, Weight, or Measure; that is in the Denomination of Pounds, Tons, or Yards, you must for every Ten carry one to the next Row, &c. saying 3 that I carry and 6 is 9, and 2 is 11, and 8 is 19, &c. and I find that at the Top it comes to 49; wherefore I set down 49 to the Left-hand of the 6; and the total Amount of the Money received for those particular Goods or Wares sold is 49*l.* 2*s.* 10*d.*

More Examples for Practice.

	<i>l. s. d.</i>	<i>l. s. d.</i>	<i>l. s. d.</i>
Money due from	Mr. Money,	17 12 6	146 12 3
	Mr. Gaunt	26 10 2	287 10 9
	Mr. Herne,	50 00 0	46 16 6
	Mr. James,	44 12 8	100 00 0
	Mr. King,	60 14 0	72 12 4
	Mr. Long	29 16 6	69 16 6
	Mr. Monk	16 10 0	460 12 9
	Mr. Napper,	20 00 0	49 10 0
	Mr. Oliver	27 11 4	7 12 4
	Mr. Perkins,	17 04 0	22 10 0
	Mr. Quinton	20 10 3	164 12 9
	Mr. Roper.	46 16 0	75 10 6
Total	377 17 5	1503 16 8	17 13 10

Addition of Avoirdupois Weight.

By this Weight are weighed all kinds of Grocery Goods or Wares, or Goods subject to waste; as Tobacco, Sugars, Fruit and Drugs; as also Flesh, Butter, Cheese, Allum, Tallow, Iron, Brass, Copper, Lead, Tin, Pewter, Pitch, Tar, Rosin, Hemp, Flax, Soap, Salt, &c.

A Table of this Weight is as follows, *viz.*

4	Quarters make 1 Dram, marked <i>dr.</i>	
16	Drams 1 Ounce	<i>oz.</i>
16	Ounces 1 Pound	<i>lb.</i>
28	Pounds 1 q. of a Hundred Weight	<i>qrs.</i>
4	Quarters 1 Hundred Weight	<i>C.</i>
20	Hundred Wt. 1 Ton	<i>T.</i>

4 28	4 28	4 28	16 16
<i>C. qrs. lb.</i>	<i>C. qrs. lb.</i>	<i>C. qrs. lb.</i>	<i>lb. oz. dr.</i>
5—1—16	24—2—12	9—1—16	24—11—24
4—2—84	42—2—00	4—3—26	42—14—15
6—3—06	16—1—12	7—1—00	64—10—11
7—1—12	25—3—24	5—3—27	29—00—10
9—0—20	19—0—20	4—3—02	16—12—13
6—2—00	26—1—22	2—2—02	27—13—14
<hr/>			
40—1—26	155—0—06	34—3—17	206—01—07

In these Examples the Manner of proceeding is the same as in the former, observing that the number of Units of each lesser denomination, which makes an Unit of the next greater, found by the preceeding Table, is placed above each Rank of Numbers; that is to say, in the first Example, 28 the Number of Pounds contained in a Quarter of an Hundred Weight, is placed over the Column of Pounds; now that Column, when added up, makes 138, which contains four 28's and 26 over, wherefore I set down 26 under the Column of Pounds, and carry 4 to the Column of Quarters, and so on.

Note, That in weighing at the Water-side, or elsewhere, they do not weigh by the Tun, though some Goods are sold by it, as Iron, Logwood, Cheese, &c. but by the Hundred, Quarters, and Pounds, which are afterwards reduced to and computed by Tuns.

Addition of Troy Weight.

By this weight are weighed Jewels, Gold, Silver, Pearls, and Medicines, and the usual Denominations are Pounds,

Ounces, Penny-weights, and Grains, as in the following Table, viz.

24 Grains make 1 Penny-weight,
20 Penny-Weights 1 Ounce, and
12 Ounces 1 Pound Troy.

Examples of Troy-Weight.

6 Ingots of Silv. wt. viz.	10 12 20 24	12 20 24
No. lb. oz. p.w. gr.	lb. oz. p. gr.	oz. p. gr.
1 Wt. 4 05 12 10	14 06 10 11	204 10 14
2 5 04 16 17	24 10 11 12	96 07 17
3 3 11 19 20	21 06 04 17	100 11 12
4 4 06 07 12	22 10 12 14	56 16 20
5 5 01 11 12	16 11 12 13	212 10 23
6 4 11 12 13	22 07 06 07	96 19 12

28 06 00 12-----12; 04 18 02-----767 17 02

If what was before said be duly observed, the Performance of the above Examples will be attended with no Difficulty.

How to prove Addition.

IN all Additions, whether of simple Numbers, that is, Numbers of one Denomination; or in Examples compound, that is of divers Denominations, as Pounds Shillings Pence, and Farthings, &c. the readiest Method of Proof is to cast the same downwards (beginning at the Top as you did the same upwards, beginning at the bottom) and if that operation produces the same Total, the Work is infallibly right, and beyond any Contradiction; and this is much better, and more feasible than the common Method used in Schools, of making two Totals by omitting the upper Line in the second. I might here also give several Examples of other Additions, such as Apothecaries Weight, Cloth, Liquid, Dry, and Long Measures, Time, &c. but the Method serves for any of them, having respect to the Tables belonging to those several Denominations, which are as follow viz.

A Table of the Parts of Apothecaries Weight.

20 Grains 1 Scruple. 8 Drams 1 Ounce.
3 Scruples 1 Dram. 12 Ounces 1 Pound.

By these Weights they compound their Medicines; but they buy and sell their Drugs by *Avoirdupois Weight*.

Cloth Measure.

4 Nails, or 9 Inches,	1 qr. of a Yard.
4 qrs. or 36 Inches,	1 Yard.
5 qrs. or 45 Inches,	1 Ell <i>English</i> .
3 qrs. or 27 Inches,	1 Ell <i>Flemish</i> .
6 qrs. or 54 Inches,	1 <i>French</i> Ell.

A Table of Wool Weight.

Note, 7*lb.* make 1 Clove; 2 Cloves, or 14*lb.* 1 Stone; 2 Stones, or 28*lb.* 1 Todd; 6 Todd and a half, 1 Wey, or 182*lb.* 2 Weys, or 364*lb.* 1 Sack; and 12 Sacks 1 Last, or 4368*lb.* 240*lb.* 1 Pack of Wool.

Note, That 1*lb.* 20*z.* 12 *gr.* Troy, is equal to a Pound Avoirdupois. And a Pound Troy, is about 13 *oz.* 2 *Drams.* and a half Avoirdupois.

		<i>l. s. d.</i>	
A Pound Weight <i>Troy</i> ,	} of Silver is worth	{ 3 02 2	
A Pound Wt. <i>Avoirdupois</i> ,		{ 4 15 3	
100 <i>l.</i> { in Gold } weighs { 1 11-3qrs }	} <i>Avo. Wt.</i>	{ 36 04 }	
{ in Silver }			

A Pound Avoirdupois is heavier than a Pound Troy; but an Ounce Troy is heavier than an Ounce Avoirdupois.

A Table of Liquid Measure.

Liquid Measure is of two Sorts, viz. one for Wine, Brandy, &c. and the other for Beer and Ale.

Wine &c.

8 Pints 1 Gallon.	2 Hogsheads 1 Pipe or Butt.
42 Gallons 1 Tierce.	2 Pipes or Butts 1 Tun, or
63 Gallons 1 Hogshead.	252 Gallons.
84 Gallons 1 Puncheon.	

Note, That sweet Oil hath 236 Gallons to the Tun; but Oil from *Greenland* hath 252 Gallons to the Tun.

Note, The Wine Gallons contains 231 Cubic or Solid Inches, by which all Liquids are measured, except Beer & Ale.

Beer Measure.

8 Pints 1 Gallon.	2 Kilderkins 1 Barrel, or 36
9 Gallons 1 Firkin.	Gallons.
2 Firkins 1 Kilderkin	1 Barrel and half, or 54 Gal-
	lons, 1 Hoghead. <i>Ale</i>

Ale Measure.

8 Pints 1 Gallon	2 Kilderkins 1 Barrel or 32 Gallons.
8 Gallons 1 Firkin of Ale, Soap or Herrings.	1 Barrel and half, or 48 Gallons 1 Hoghead.
2 Firkins 1 Kilderkin.	

Note, The Beer, and Ale Gallon are the same, viz. 282 solid Inches; but with this difference, *i. e.* the Barrel of Beer contains 1228 Cubic Inches, or 4 Gallons more than the Barrel of Ale.

In a Tun of Wine are

2 Pipes or Butts.
6 Tierces.
252 Gallons.
504 Pottles.
1008 Quarts
2016 Pints.

In a Puncheon are

84 Gallons
168 Pottles
336 Quarts
672 Pints

In a Hoghead are

63 Gallons
126 Pottles
252 Quarts
504 Pints

In a Barrel of Beer are

2 Kilderkins

In a Pipe or Butt are

2 Hogheads.
3 Tierces.
126 Gallons.
252 Pottles.
504 Quarts
1008 Pints.

4 Firkins
36 Gallons
72 Pottles
144 Quarts
288 Pints

In a Barrel of Ale are

2 Kilderkins
4 Firkins
32 Gallons
64 Pottles
128 Quarts
256 Pints

Dry Measure.

2 Pints 1 Quart
2 Quarts 1 Pottle
2 Pottles 1 Gallon.
2 Gallons 1 Peck
4 Pecks 1 Bushel Land Measure
5 Pecks 1 Bushel Water Measure
4 Bushels 1 Comb, or half Quarter
2 Combs 1 Quarter

Salt and Sea-coal are heaped, or else there are 5 Pecks to the Bushel.

In the Last are

2 Weys
10 Quarters
80 Bushels
320 Pecks
1280 Pottles
2560 Quarts
5120 Pints.

4 Quar-

4 Quarters 1 Chaldron	<i>In a Wey are</i>
5 Quarters 1 Wey	5 Quarters
2 Weys 1 Laft or 10 Quarters	40 Bushels
4 Fatts, or Vatts; 36 Bushels of Sea-coal, 1 Chaldron; and 21 Chaldrons-accounted a Score in the River Thames.	160 Pecks 320 Gallons 640 Pottles 1280 Quarts 2560 Pints.

Note, By an Act, Anno 1712, the Bushel is 2178 Cubit Inches, and a Gallon of this Measure is 272 and Quarter Cubic Inches.

Long Measure.

3 Barley Corns 1 Inch	6 Feet 2 Fathom, or 2 Yards
12 Inches 1 Foot	40 Poles, or 220 Yards 1
3 Feet 1 Yard	Furlong
3 Feet 9 Inches 1 Ell Eng.	8 Furlongs 1 Mile, or 1760
5 Feet a Geometrical Pace	Yards.
5 Yards and a half, 1 Pole, 3 Miles 1 League.	
Perch or Rod.	

In a Mile are

8 Furlongs.	5280 Feet
320 Poles	63360 Inches
1760 Yards	190080 Barley Corns.

Land Measure.

5 Yards and a half, 1 Pole, Perch, Rod.
40 Poles make 1 Furlong, or quarter of an Acre.
160 Poles in Length, and 1 in Breadth, is one Acre.
80 Poles in Length, and 2 in Breadth, one Acre; and
40 Poles in Length, and 4 in Breadth, one Acre.
4 Poles in Length, make one Chain.
10 Chains in Length, and one in Breadth, make one Acre.

Time.

60 Seconds one Minute	<i>In a Year are</i>
60 Minutes one Hour	
24 Hours one natural Day	31557600 Seconds
7 Days one Week	525960 Minutes
4 Weeks one Month	8766 Hours
12 Months, one Day, and 6 Hours, one solar Year.	365 Days 6 Hours.

Note

Note, The Solar Year is divided in 12 Calendar Moaths, which contains 365 Days, according to this good old Verse, viz.

Thirty Days hath September, April June, and November, February, hath 28 alone, and all the rest have Thirty-one.

S U B T R A C T I O N.

THE next Rule in Arithmetic is *Subtraction*, (commonly, but erroneously, called *Substraction*) and this Rule teaches to take a lesser Number out of a greater, and sheweth the Remainder, Excess, or Difference.

Place the lesser Number under the greater, (with the same Care, and in the same Order as in Addition) draw a Line under them, and beginning at the Right-Hand, take each Figure in the lower Line from the Figure under which it stands; but if the Figure in the lower Line is greater than that in the upper, then in Numbers of one Denomination, ten must be borrowed and added to the Figure in the upper Line; then take the Figure in the lower Line from the Sum and write down the Remainder, but for every ten thus borrowed, one must be paid or added to the next Left-hand Figure in the lower Line. Example: suppose Mr. *Andrews* owes to Mr. *Baker* 323*l.* whereof Mr. *A* hath paid to Mr. *B.* the Sum of 146 in Part; what remains due to Mr. *Baker*? Answer

177*l.*

Here the lesser Number 146 stands under the greater 323; and to find the Remainder, or Sum remaining due, I say 6 from 3 I cannot, but 6 from 13 (for you borrow 10 and add it to the Figure or Cypher that stands directly over the Figure you subtract) and there remains 7; then 1 that I borrow and 4 is 5, for as I borrowed 10 in the inferior place, which is equal to one in the superior, so I must now pay the same; therefore I say, 5 from 2 I cannot, but 5 from 12 (borrowing 10 and adding it to the Figure 2, as above directed) and there remains 7; then 1 that I borrowed and 1 is 2, from 3, the Figure above it, and there remains 1, and so the Example is done; and by it is shewn that *A* still owes *B.* 177 Pounds; for a proof of its Verity, add 177 the Remainder, to 146, the lesser of the two given Numbers, and it will make 323, being the same with the greater Number, or Sum of Money first due; and therefore is a sure proof of the Truth and Certainty of the Rule. And as *Subtraction* is proved by *Addition*, so may *Addition* be

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proved by *Subtraction*; for if the two aforesaid Numbers, viz. 323 and 146, are added, their total is 469; from which if you deduct 146, the Remainder will be the greater Number; or if you subtract 323 from the said 469, the Remainder will be 146 the lesser Number.

All Examples in *Subtraction* of Numbers of one Denomination is performed as above, they varying not at all; but, however, once more, for the better Explanation, admit a great Sheep-master hath in all 6904 Sheep, and takes out of them 2490 to dispose of at Market, how many doth he leave behind? To know this set them down thus:

From-----6904 the greater Number,
Take-----2490 the lesser

Answer 4414

Here I deduct 0 from 4 and there remains 4; then 9 from nothing (or 0) I cannot but 9 from 10 (adding 10 to the 0) and there remains 1; and 1 that I borrowed and 4 makes 5 and 5 from 9, and there remains 4; and lastly, 2 from 6 & there remains also 4, for I borrowed none, and therefore there's no Occasion of paying) so that leaves behind him just 4414; which put to the Number he takes to Market, makes the Number he had, viz. 6904, and shews the Deduction to be true, and the Answer right.

More Examples for Practice.

	<i>l.</i>	<i>Yards.</i>	<i>Gallons.</i>	<i>Pounds.</i>
From	4796	3700	47200	479672
Take	2929	1976	31976	97694
	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Rem.	1867	1724	15224	381978
	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Proof	4796	3700	47200	479672
	<u> </u>	<u> </u>	<u> </u>	<u> </u>

The Distance of Time since any remarkable Event may be found by subtracting the Date thereof from the Date of the present Year.

Examples.

I.--1779
1666 the Fire of London.

II.-----1779
1588 Spanish Invasion.

Since 113 Years.

Since 191 Years.

III

III.---1779

1605 Gunpowder Treason.

Since 164

Subtraction of Divers Denominations.

Here if the Figure or Figures, placed in the lower Line, exceed those in the upper, then as many Units must be borrowed, as make a Unit, or one, of the next superior Denomination; and one must be carried to the next Left-hand Place in the lower Line, as before.

Of Money.

	<i>l.</i>	<i>s.</i>	<i>d.</i>	
Due-----	9	02	9	Suppose Mr. <i>Campion</i> owes Mr.
Paid-----	6	16	4	<i>Darnell</i> 9 <i>l.</i> 2 <i>s.</i> 9 <i>d.</i> and Mr. <i>C.</i> hath
				paid Mr. <i>D.</i> in part 6 <i>l.</i> 16 <i>s.</i> 4 <i>d.</i>
				what remains due to Mr. <i>Darnell</i> ?
Rests due--	2	06	5	Answer, There is due to Mr. <i>Darnell</i> ,
				2 <i>l.</i> 6 <i>s.</i> 5 <i>d.</i>

	10	20	12	4	
	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>qr.</i>	
Sold for----	242	16	3	3	f
Paid in Pt.---	174	12	6	2	f
Answer-----	068	03	9	1	f

Again, Mr. *Edwards* sells to Mr. *Francis*, Spanish Wool, to the Value 242*l.* 16*s.* 3*d.* 3*qr.* and pays present Money the Sum of 174*l.* 12*s.* 6*d.* 2*qr.* what Money remains unpaid from Mr. *Francis*? Answer 68*l.* 3*s.* 9*d.* 1 *qr.*

In the first of these Examples I say, 4*d.* from 9*d.* and there remains 5*d.* then 16*s.* from 2*s.* I cannot, but borrowing one Integer of the next Denomination, or 1 Pound which is 20*s.* I say 16 from 20, and there rests 4, and adding thereto the Number 2 it makes 6; wherefore I put down 6 in the Place of Shillings, and say 1 that I borrowed and 6 is 7; now 7*l.* from 9*l.* there remains 2*l.* so the Money resting due to Mr. *Darnell* is 2*l.* 6*s.* 5*d.* as in the Example.

In the second Example, I say, 2 Farthings (or an Half-penny) from 3 Farthings, and there remains 1 or one Farthing, which I set down in its proper place, viz. under the Denomination of Farthing; then 6 from 3 I cannot, but 6 from 12, (as marked over the Denomination) and there remains 6, and 3*d.* over it makes 9*d.* which I place under the line in its right place- viz. of pence; then one that I borrowed (that is 1 Shilling) and 12 is 13; 13*s.* from 16*s.* and

proved by *Subtraction*; for if the two aforeſaid Numbers, viz. 323 and 146, are added, their total is 469; from which if you deduct 146, the Remainder will be the greater Number; or if you ſubtract 323 from the ſaid 469, the Remainder will be 146 the leſſer Number.

All Examples in *Subtraction* of Numbers of one Denomination is performed as above, they varying not at all; but, however, once more, for the better Explanation, admit a great Sheep-maſter hath in all 6904 Sheep, and takes out of them 2490 to diſpoſe of at Market, how many doth he leave behind? To know this ſet them down thus:

From-----6904 the greater Number,
Take-----2490 the leſſer

Answer 4414

Here I deduct 0 from 4 and there remains 4; then 9 from nothing (or 0) I cannot but 9 from 10 (adding 10 to the 0) and there remains 1; and 1 that I borrowed and 4 makes 5 and 5 from 9, and there remains 4; and laſtly, 2 from 6 & there remains alſo 4, for I borrowed none, and therefore there's no Occaſion of paying) ſo that leaves behind him juſt 4414; which put to the Number he takes to Market, makes the Number he had, viz. 6904, and ſhews the Deduction to be true, and the Answer right.

More Examples for Practice.

	<i>l.</i>	<i>Yards.</i>	<i>Gallons.</i>	<i>Pounds.</i>
From	4796	3700	47200	479672
Take	2929	1976	31976	97694
	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Rem.	1867	1724	15224	381978
	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Proof	4796	3700	47200	479672
	<u> </u>	<u> </u>	<u> </u>	<u> </u>

The Diſtance of Time ſince any remarkable Event may be found by ſubtracting the Date thereof from the Date of the preſent Year.

Examples.

I.--1779

1666 the Fire of London.

Since 113 Years.

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Since 191 Years.

III

III.---1779

1605 Gunpowder Treason.

Since 164

Subtraction of Divers Denominations.

Here if the Figure or Figures, placed in the lower Line, exceed those in the upper, then as many Units must be borrowed, as make a Unit, or one, of the next superior Denomination; and one must be carried to the next Left-hand Place in the lower Line, as before.

Of Money.

	<i>l.</i>	<i>s.</i>	<i>d.</i>		Suppose Mr. <i>Campion</i> owes Mr.
Due-----	9	02	9		<i>Darnell</i> 9 <i>l.</i> 2 <i>s.</i> 9 <i>d.</i> and Mr. <i>C.</i> hath
Paid-----	6	16	4		paid Mr. <i>D.</i> in part 6 <i>l.</i> 16 <i>s.</i> 4 <i>d.</i>
					what remains due to Mr. <i>Darnell</i> ?
Rests due--	2	06	5		Answer, There is due to Mr. <i>Darnell</i> , 2 <i>l.</i> 6 <i>s.</i> 5 <i>d.</i>

	10	20	12	4		Again, Mr. <i>Edwards</i> sells to
	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>qr.</i>		Mr. <i>Francis</i> , <i>Spanish</i> Wool, to
Sold for----	242	16	3	3-f		the Value 242 <i>l.</i> 16 <i>s.</i> 3 <i>d.</i> 3- <i>qr.</i>
Paid in Pt.--	174	12	6	2-f		and pays present Money the
						Sum of 174 <i>l.</i> 12 <i>s.</i> 6 <i>d.</i> 2- <i>qr.</i> what
Answer-----	68	03	9	1-f		Money remains unpaid from
						Mr. <i>Francis</i> ? Answer 68 <i>l.</i> 3 <i>s.</i>
						9 <i>d.</i> 1 <i>qr.</i>

In the first of these Examples I say, 4*d.* from 9*d.* and there remains 5*d.* then 16*s.* from 2*s.* I cannot, but borrowing one Integer of the next Denomination, or 1 Pound which is 20*s.* I say 16 from 20, and there rests 4, and adding thereto the Number 2 it makes 6; wherefore I put down 6 in the Place of Shillings, and say 1 that I borrowed and 6 is 7; now 7*l.* from 9*l.* there remains 2*l.* so the Money resting due to Mr. *Darnell* is 2*l.* 6*s.* 5*d.* as in the Example.

In the second Example, I say, 2 Farthings (or an Half-penny) from 3 Farthings, and there remains 1 or one Farthing, which I set down in its proper place, viz. under the Denomination of Farthing; then 6 from 3 I cannot, but 6 from 12, (as marked over the Denomination) and there remains 6, and 3*d.* over it makes 9*d.* which I place under the line in its right place- viz. of pence; then one that I borrowed (that is 1 Shilling) and 12 is 13; 13*s.* from 16*s.* and

there rests 3, which I likewise set down under its own Rank; then 4 from 2 I cannot, but 4 from 12 (borrowing 10) and there rests 8; then 1 that I borrow and 7 makes 8; 8 from 4 I cannot, but 8 from 14, and there remains 6; so that the Sum remaining due is 68*l.* 3*s.* 9*d.* 1-*qr.* as in the Work. For its Proof, you must add the Remainder, 68*l.* 3*s.* 9*d.* 1-*qr.* to the lesser, or under Sum, 174*l.* 12*s.* 6*d.* 2*qr.* and it makes 242*l.* 16*s.* 6*d.* 3-*qr.* the Sum first due, and is a Proof of the Work's being right.

More Examples for Practice.

	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>l.</i>	<i>s.</i>	<i>d.</i>
Due - -	174	16	06	74	10	4	2471	07	06
Paid - -	97	12	04	29	12	9	1976	17	06
Remain - -	77	04	02	44	17	7	494	10	00
Proof - -	174	16	06	74	10	4	2471	07	06
1 st Due - -	74	00	00	274	16	6	796	00	0
Paid - -	46	12	10	197	19	4	279	11	7
Balance - -	27	07	02	76	17	2	516	08	5
Proof - -	74	00	00	274	16	6	796	00	0

Sometimes a Sum owing may be paid at several Times; then the several payments must be added together, and their Total deducted from the Sum first due as in this and the following Examples.

Owing 266*l.*

<i>Paid at Times.</i>	{	20
		15
		30
		90
		17
		24
		60

Paid in all 256 *de-*
duct

Rests due 10
Proof 266

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	<i>l.</i>	<i>s.</i>	<i>d.</i>		<i>l.</i>	<i>s.</i>	<i>d.</i>
More due -	249	12	0	Received -	100	10	0
Received at several Times	24	12	6	Paid to several Persons	6	16	0
	9	14	9		10	00	0
	20	00	0		5	12	6
	16	16	6		20	10	0
	22	10	2		7	09	6
	13	12	6		9	08	6
	7	16	4		7	12	6
Received in all	115	02	9	Paid in all	67	09	0
Rests due	134	09	3	Remains in the Bag,	33	01	0
Proof —	249	12	0				

Avoirdupois Weight.

<i>Tons.</i>	<i>C.</i>	<i>qrs.</i>	<i>lb.</i>	<i>C.</i>	<i>qrs.</i>	<i>lb.</i>	<i>lb.</i>	<i>oz.</i>	<i>dr.</i>
From 44	12	1	10	246	2	12	146	02	10
Take 39	14	2	06	164	3	22	97	10	12
Remain 4	17	3	04	81	2	18	48	07	14
Proof 44	12	1	10	246	2	12	146	02	10

Troy Weight.

<i>lb.</i>	<i>oz.</i>	<i>pwt.</i>	<i>gr.</i>	<i>oz.</i>	<i>pwt.</i>	<i>gr.</i>
From 462	04	10	11	1247	10	12
Take 196	09	06	08	976	16	17
Remain 265	07	04	03	270	13	19
Proof 462	04	10	11	1247	10	12

And so much for *Subtraction* ; which Method will serve for any Denomination whatever, having Respect to the several Tables of Quantity, as before hinted in *Addition*.

MULTIPLICATION.

THE next Rule in order is *Multiplication*, and perhaps the most serviceable Rule in *Business*, for its quick dispatch of all others in *Arithmetic*; which I shall endeavour to shew, by its Nature, Quality, and Use. Now,

Multiplication is a Rule, that by two Numbers given, teaches to find out a third, which shall contain either of the two, as many times as the other containeth an Unit.

2. *Multiplication* is also a compendious Working of *Addition*.

3. It serves likewise to bring great Denominations into small, as Pounds into Shillings, Pence, or Farthings.

4. Having the Length and Breadth of a Plain Surface, we find its Content in superficial or square Measure.

5. By *Multiplication* we find having the value of one Thing, or the Wages of one Person, how to know the Value of many such things, or the Wages of many such Persons.

In *Multiplication* we are particularly to take Notice of these three Terms, *viz.*

The { *Multiplicand,*
Multiplier, and
Product.

1. The *Multiplicand* (generally the lesser of the two Numbers) is the Number by which the former is to be multiplied.

3. The *Product* is the Result of the Work, or Answer. The *Multiplier* and *Multiplicand* are collectively called *Factors*.

But before any Procedure can be made in this Rule, it is necessary to have the following Table by heart, and that very perfectly.

The

The Multiplication Table.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

This Table is so plain and easy, that there is no Need of Direction ; for the Product of any two Figures will be found in that Square, which is on a Line with the one, and under the other ; thus 54 the Product of 6 and 9, will be found on a Line with 6, and under 9, or in a Line with 9, and under 6 ; so 7 times 8 is 56, and 8 times 7 is 56, &c. And thus the Table ought to be got by heart for the more dexterous Readiness in multiplying.

Now for Application.

Example 1. How many is 3 times 472 ? Which being set down in the Margin ; I say, 3 times 2 is 6, which place under 3 the Multiplier ; then 3 times 7 is 21 ; set down 1 under 7, and carry 2 for the two Tens, as in *Addition of one Denomination*, then 3 times

H 2

472
3
—
1416
4 is

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4 is 12, and 2 carried is 14, which set down, and the Product is 1416; that is 3 times 472 makes so much; which may be proved by *Addition*, by setting 472 3 times in Additional Order, and casting it up, which makes the Assertion good in the second Definition, That this Rule compendiously performs the Office of Addition. Likewise the foregoing Example agrees with the first Definition; for as three times 472 makes 1416, so doth 472 times 3 make the same, viz. 1416.

Example 2. Again, how many are produced by multiplying 742 by 4?

742 <i>Multiplicand</i>	} Here I say, four times 2 is 8, and 4	
4 <i>Multiplier</i> .		times 4 is 16; 6 and carry 1; and 4
2968 <i>Product</i> .		times 7 is 28, and 1 is 29, which set down; so the whole Product is 2968, as appears by the Work.

More Examples of one Figure in the *Multiplier* are these, viz.

<i>Multiplicand</i>	7420	4444	7469	90704	56789
<i>Multiplier</i>	5	6	7	8	9
<i>Product</i>	37100	26664	52283	725632	511101

Compound Multiplication,

Is when the Multiplier consists of two, three or more Figures or Cyphers.

And here you must begin with that Figure which is in the place of Units of the Multiplier, and go through the whole Multiplicand, by multiplying each Figure of it first by the said Unit Figure, then by the next, to wit, by the Figure in the Place of Tens of the Multiplier; then with the third, &c. to the last; always remembering to place the last Figure of every Product or Line (for you will ever have as many as you have significant Figures in the Multiplier) I say remember to place the last Figure of each Line exactly and perpendicularly under the Figure you multiply by; and then add the several Lines or Product together, which so collected give the total Product required, as in the Examples following, viz.

Example

Example I.

How many are 23 times 7426 ; First, I begin with the Unit Figure 3 in the Multiplier, saying 3 times 6 is 18 ; 8 (which I set directly under 3 by which I multiply) and carry 1 ; then 3 times 2 is and 1 is 7 ; then 3 times 4 is 12 ; 2 and carry 1 ; then 3 times 7 is 21, and 1 is 22 ; and so I have done with the first Figure of the Multiplier, viz. 3. Then I go to the next, that is 2, and twice 6 is 12 ; 2 and I carry 1 (which 2 is placed in a direct Line under 2 the multiplying Figure) then twice 2 is 4, and 1 is 5 ; then twice 4 is 8 ; and lastly, twice 7 is 14, which I set down ; then I add the two Products together, saying 8 is 8, &c. and the Total is the true Product or Result of the Multiplication, viz. 170798. Again,

Example II.

What is the Product of — — — — Multiplied by

It will appear too prolix, and altogether unnecessary to give more verbal Directions ; nay, indeed, nauseous Tautology, since those given above are sufficient ; and therefore the Learner is referred to the Observation of the Example, as also to those two that follow, viz.

527535	27587
15728	19725
4220280	1370735
1955070	551654
3692745	1930789
263765	2482443
527535	275827
8297070480	5440687875

When Cyphers are intermixed with Figures in the Multiplier, then multiply by the Figures as above ; and when you come to a Cypher in the Multiplier, then set down another Cypher exactly and perpendicularly under it, then begin the Multiplicand again with the next Figure to the

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Cypher in the Multiplier, and go through it in the same Line, placing the first Figure of that Product next to the Cypher, towards the Left-hand, but then heed must be taken that the next Figure or Cypher of the next Line must be set down one Degree farther towards the Left-hand, and not immediately under the last Figure set down the Cypher: As in the following Examples may be fully understood.

24393	7864371	327586
402	23604	6030
<hr/>	<hr/>	<hr/>
48786	31457484	9827580
975720	471862260	19654160
<hr/>	<hr/>	<hr/>
9805986	23593113	
	15728742	1975343580
<hr/>	<hr/>	<hr/>

185630613084

When you have a Cypher or Cyphers in the Multiplier, at the Beginning towards the Right hand, then set it, or them, backwards from the Place of Units towards the Right-hand; and when you have multiplied by the Figure or Figures, annex the Cypher or Cyphers: *As in these Examples.*

4762	47962	432
70	400	2600
<hr/>	<hr/>	<hr/>
333340	19184800	27792
<hr/>	<hr/>	<hr/>
		9264
		<hr/>
		1204300

If you have Cyphers both in the Multiplicand and Multiplier, then neglect the Cyphers in both, and multiply by the Figures, and annex the Cyphers at last: *As in these Examples.*

42000	42300	376100
220	12000	2400
<hr/>	<hr/>	<hr/>
852	846	15056
852	423	7528
<hr/>	<hr/>	<hr/>
9372000	307600000	903360000

When

When you are to multiply by 10, 100, 1000, or 10,000, it is only adding or annexing so many Cyphers to the Multiplicand, that is, either 1, 2, 3, or 4 Cyphers, and the Work is done. *Example*, Suppose I am to multiply 373 by the Numbers above; if I multiply it by 10, then I join 0 to 373, and then it makes, or the product is, 3750; if by 100, then I annex 00, and then it makes 37500; if by 1000, I put to it 000, and then it produces 375000; and lastly, if by 10,000, I then add 0000, and then it makes 3750000, &c. And thus may any Number be multiplied when the *Multipplier* consists of an *Unit* with any Number of Cyphers, and done by Inspection only, without any formal setting down the *Multiplicand* with a Line drawn under it, &c.

Thus far for Direction in the Manner how to multiply; the next will be to shew the Uses of *Multiplication* in real of Business, and how to apply it on proper Occasions, viz.

1. Suppose you want to know how many half Crowns there are in 246*l*. you know that 8 half Crowns make 1*l*. wherefore set them down thus,

$$\begin{array}{r} \text{Multiply by} \quad 246\text{*l*.} \\ \quad \quad \quad 8 \\ \hline \text{Answer} \quad \quad 1968 \end{array}$$

Again, in 1968 half Crowns, how many Pence?
30 Pence in half a Crown.

5940 Pence, the Answer.

And this serves to make out, that great Denominations are brought into smaller by this Rule, according to the third Definition.

2. Admit you wanted to know the Contents of a large Shuffle board Table, 34 Feet long, and 4 Feet wide, multiply 34 the Length by 4 the Breadth, and the Answer will be 136 square Feet for the true Contents of such a Table. And this agrees with the fourth Definition of this Rule.

3. If I know the Value of a Yard of Broad cloth to be 12 Shillings, what is the Value of 220 Yards of the said Cloth in Shillings?

Multiply

Multiply by $\begin{array}{r} 220 \\ 12 \end{array}$

$\begin{array}{r} 440 \\ 220 \\ \hline \end{array}$

2640 Shillings, or 132 Pounds.

If the Wages of 1 Seaman be 23 Shillings a Month, what is the Wages of 250 Seamen for the same Time?

Multiply by $\begin{array}{r} 23 \end{array}$

$\begin{array}{r} 750 \\ 500 \\ \hline \end{array}$

Answer 5750 Shillings, or 217*l.* 10*s.*

And these two Examples accord with the fifth Definition; or Use of this Rule.

And thus much for common *Multiplication*.

I shall in the next place say some small matter concerning *Multiplication of Money*, and a little of its use, and so conclude this Rule.

Multiplication of Money.

Multiplication of Money (what most would learn above any thing) hath Affinity to *Addition of Money*; the same Method being taken in carrying from one Denomination to the next, *viz.* from Farthings to Pence, from Pence to Shillings, and from Shillings to Pounds. And as in *Addition* (and other *Multiplications*) you begin at the Right-hand, and proceed towards the Left, so here you begin at the least Denomination, which is also at the Right-hand.

This Method of accompting is the most apt and expeditious of all others, for small Quantities, and therefore extremely necessary in making Bills of Parcels, &c. and is, beyond all Contradiction, as sure and certain as any Way whatsoever.

The General Rule.

Is always to multiply the Price by the Quantity.

The first Step is, for Quantities from 2 to 12; and this is done by one Multiplier, as in the Examples following.

Example

Example I.

	l.	s.	d.
Multiply _____	7	12	06
(or 6 Pieces of Cloth at l.--12--6 per Piece) by _____			6

45 15 00

Here I say 6 times 6 is 36 Pence, which is just 3s. I set down 0 in the place of Pence, and carry 3s. to the place of Shillings, (exactly the same as in Addition of Money) then 6 times 12 is 72, and 3 is 75s. or 3l. 15s. wherefore I set down 15 in the place of Shillings, and carry 3 to the Pounds; then 6 times 7 is 42, and 3 is 45l. So the whole Amount of the 6 Cloths, at 7--12--6 per Cloth, is 45l. 15s. as in the Work, which is very concise.

Example II.

Again, How much is 9 times 13s. and 4d. or what is the Amount of 9 Marks?

In this Example I say, 9 times 4 is 36d. or 3s. I set down 0, and carry 3; then 9 times 3 is 27, and 3 makes 30: I set down 0, and carry 3 (as in Multiplication of simple Numbers); then 9 times 1 is 9, and 3 is 12; which is in the place of Tens of Shillings, and being halved, make just 6d. and so much is the Value of 9 Marks.	9	00	00
---	---	----	----

Example III.

Once more: What comes 12 Gallons of Wine to, at 5s. 4d. per Gallon?

Here I say 12 times 4 is 48; 0 and carry 4; then 12 times 5 is 60, and 4 is 64s. or 3l. 4s. 8c.	5	4	12
	12	3	4 0

The next Degree or Step of Advance in this way of Reckoning is of Quantities exceeding 12, even 12 times 12, or 244; all which, as far as 144, are found in that excellent Table, the *Table of Multiplication*; which is a ready Help to all Purposes of Reckoning, and particularly in this Way; and that you may proceed with Dexterity, you must be very ready in the said Table, that you may be immediately apprehensive what component Parts hit your Quantity proposed, or pretty near it (for any Quantity below 12 needs no Recollection at all, as in two of the Examples foregoing) and work accordingly: If the Quantity be 15 Yards, I readily know that 3 times 5 is 15; and there-

therefore 5 and 3, and 3 or 5, are to be my Multipliers: If the Quantity were 21, then 3 and 7, or 7 and 3, would be Multipliers; if 30, then 5 and 6, or 6 and 5; also 3 and 10, or 10 and 3; if 45, 48, 56, 66, 72, 96, &c. were the Quantities, then 5 and 9, 6 and 8, 6 and 11, 6 and 12, &c. are to be my Multipliers, and exactly hit the several Quantities of which they are component Parts; and Examples of this Kind have two Multiplications for their Solution.

When the Quantity proposed is a Number irregular, or such a number that no two Numbers in the Table can be found to answer it, then we must multiply by two such Numbers as come pretty near it, as is said above; and for the Number wanting to make up the Number or Quantity proposed, multiply the given Price of one by the Number that is wanting, which will make three Products by three Multiplications; which last Product must be added to the foregoing Products resulting from two Multiplications, and the Total will be the Answer.

And first, I shall shew Examples of the second Step, *viz.* of Regular Quantities that exceed 12, and are precisely answered at two Multiplications, such as mentioned above, *viz.*

What comes 15 Yards of Muslin to, at per Yard?

s. d.
3 5
3

Here 3 time 5 is 15*d.* or 1*s.* and 3*d.* 3 and carry 1*s.* then 3 times 3 is 9, and 1 is 10*s.* so the first Product is 10*s.* 3*d.* which I multiply by 5, saying, 5 times 3 is 15*d.* or 1*s.* 3*d.* 3 and carry 1; then 5 times 10 is 50, and 1 is 51*s.* or 2*l.* 11*s.* So the Amount of 15 Yards, at 3*s.* 5*d.* per Yard, is 2*l.* 11*s.* 3*d.* And demonstrable thus, If 10*s.* 3*d.* be the Value of 3 times 3*s.* and 5*d.* then 5 times 10*s.* 3*d.* must of necessity be 15 times the Value of 3*s.* 5*d.* because 5 times 3 is 15; And its Truth may be proved by *Addition*, and *Multiplication*, thus, set down 3*s.* 5*d.* three times, in Additional Order, and put the three Lines together, and the Total of them multiply by 5, as before, and the Answer will be the same. Or set down 17*s.* 1*d.* (the Product of 3*s.* 5*d.* multiplied by 5) three times also, and add them together, and the Total will be exactly the same with the Result of Multiplication; as in the following Specimens of Work.

10 3
3
2 11 3

(1)	(2)	s. d.
s. d.	s. d.	s. d.
3-5	3-5	17-1
3-5	5	17-1
3-5	_____	17-1
_____	17-1	_____
10-3	_____	2-11-3
5	_____	_____

2-11-3		

Here the first of these two Proofs is worked by *Addition* and *Multiplication*, and the second by *Multiplication* (as per Margin) and *Addition*. Also,

But this we see, that in all Examples under this Head, we are to pitch on two Numbers (for *Multipliers*) in the Table; which multiplied together, make the quantity proposed; and then we are to multiply the Price by one of the Numbers (it matters not by which first) and then that Product is to be multiplied by the other Number, and the second or last Product will be the Answer.

Example Second.

Again, what is the Value of *twenty-one* Gallons of Brandy?

s. d.
at 7-9 per Gallon.
7 and 3

2-14-3
3

8-02-9

In this Example I say, 7 times 9 is 63d. or 5s. 3d. I set down 3 and carry 5; then 7 times 7 is 49, and 5 is 54s. or 2l. 14s. So the 1st Product is 2l. 14s. 3d. which I multiply by 3, and that produces the last Product or Answer, viz. 8l. 2s. 9d.

Now follow a few more Examples of this Sort, without any verbal Directions, because I think those already given to be sufficient.

Example

Example 3.

What come thirty Ells of
Holland to, *s. d.*
at 3 7 per Ell.
10 and 3

$$\begin{array}{r} 1 \quad 15 \quad 10 \\ 3 \\ \hline \end{array}$$

Ans. 5 17 06

Example 4.

45 Pounds of Raw Silk
at 15s. 6d. per lb.
5 and 9

$$\begin{array}{r} 3 \quad 17 \quad 6 \\ 9 \\ \hline \end{array}$$

Ans. 34 17 6

Example 5.

56 Bushels of Wheat.
s. d.
at 4 9
7 and 8

$$\begin{array}{r} 1 \quad 13 \quad 3 \\ 8 \\ \hline \end{array}$$

Ans. 13 06 0

Example 6.

s. d.
72 broad Pcs. at 23 6 each.
12 and 6

$$\begin{array}{r} 14 \quad 02 \quad 0 \\ 6 \\ \hline 84 \quad 12 \quad 0 \end{array}$$

Example 7.

108lb. of Indigo Lahore.
at 7s. 8d.
9 and 12

$$\begin{array}{r} 3 \quad 9 \quad 0 \\ 12 \\ \hline \end{array}$$

Ans. 41 8 0

Example 8.

96 C. of Currants.
l. s. d.
at 2 13 6 per C.
8 and 12

$$\begin{array}{r} 21 \quad 8 \quad 0 \\ 12 \\ \hline \end{array}$$

Ans. 256 16 0



The next Gradation of Advance is of quantities irregular or of Numbers that are not to be answered precisely at two Multiplications: In this Case there ariseth no Increase of difficulty, but it is as easy as the Example foregoing: Only here you will have an Addition of one Line more, occasioned by bringing down the Price of one to be added to the last Product; or else a Line more, made by multiplying the Price by what is defective or wanting in the Number by two Multiplications, to make up the proposed Quantity complete; as it may be of 2, 3, 4, 5, &c. as by the subsequent Examples may be seen and understood.

Example 1 What is the Product of 2*l.* 13*s.* 6*d.* multiplied by 39?

L. 2 13 6 and 6
6

16 01 0
6

96 06 0
8 00 6

104 06 6

that is defective or wanting to make up 36 to 39, saying, three times 6 is 18*d.* &c. And finding that three times 2*l.* 13*s.* 6*d.* is 8*l.* 00*s.* 6*d.* which added to 96*l.* 6*s.* 0*d.* the Total gives the complete Value of 39; and 36 and 3 makes 39, See the Work.

Example 2 What comes 79 C. wt. of Cheese to at 28*s.* per C. weight.

l. s. d.
1 8 0
7 and 11

9 16 0
11

107 16 0
2 16 0

110 12 0 *Ans.*

and that gives 2*l.* 16*s.* 0*d.* which added makes the whole

Here I find that 6 multiplied by 6, makes 36; which is exactly within 3 of the quantity proposed; wherefore I multiply by 6, and that product again by the other 6; the last product is 96*l.* 6*s.* which is the Value of 36; but we want to know the Value of 39, wherefore I multiply the price of one, viz, 2*l.* 13*s.* 6*d.* by 3

In this Example I say, 7 times 0 is 0; then 7 times 8 is 56; which is 2*l.* 16*s.* set down 16 and carry 2; then 7 times 1 is 7, and 2 carried make 9 So the first product is 9*l.* 16*s.* 0*d.* and multiplied by 11, produces 107*l.* 16*s.* 0*d.* or the Value of 77; then for 2 wanting I multiply the price by it,

I

Value

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Value of 79, viz. 110l. 12s. 0d. as in the Work. Or as, there are no Pence in the Price, you may multiply 28s. by 9, without bringing it into Pounds as you work it, but omit it till the last Figure or Cypher of the Product towards the Right hand, and halve those towards the left, when half will be Pounds, & the Figure cut off Shillings, as in this Example.

$$\begin{array}{r}
 s. \\
 28 \\
 \times 9 \\
 \hline
 252 \\
 196 \\
 \hline
 221 \ 2 \\
 \hline
 \text{£. } 110 \ 12 \\
 \hline
 \hline
 \end{array}$$

The half of two is one, the half of two is one, and the half of one is 0, which one joined to the 2 severed from the 221 makes 12; so the Answer is 110l. 12s as before.

Example 3. 111 Pound of Sugar at 5d. per lb. set down thus

$$\begin{array}{r}
 s. \quad d. \\
 5 \text{ per Pound} \\
 10 \text{ and } 10
 \end{array}$$

$$\begin{array}{r}
 4 \ 07 \\
 10 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 2 \ 05 \ 10
 \end{array}$$

05 06 the Product of 5d. by 12 defective.

$$\begin{array}{r}
 2 \ 11 \ 04 \text{ the Answer.} \\
 \hline
 \hline
 \end{array}$$

Here after I have multiplied by 10 and 10 the Parts of 100, there wants 12; wherefore I multiplied 5d. by 12 and it gives 5s. 6d. for 12lb. at 5d. which added to 2l. 5s. 10d. the Value of 100, makes 2l. 11s. 4d. the true value of 112lb. at 5d. per pound.

Example

Example 494 Stone of Beef at 22d. or 1s. 10d. per Stone.

1s.	10d.
	10 and 9
<hr/>	
18	04
	9
<hr/>	
8	04 00
	07 04
<hr/>	
8	12 4 Anf.

Here what is wanting after the two Multiplications, is 4; wherefore I multiply 1s. and 10. (the Price) by four which produces 7s. 4d. to be added &c.

Example 5.

	l.	s.	d	
at	1	05	06	per C.
			9 and 10	
<hr/>				
	11	09	06	
			10	
<hr/>				
	114	15	00	
	8	18	06	
	0	12	09	for $\frac{1}{2}$ C.
<hr/>				
	124	06	03	

97 C $\frac{1}{2}$ Raisins.

After I have multiplied by 9 and 10, I multiply the Price 25s. 6d. by the Quantity wanting, and it produces 8l. 18s. 6d. then for the $\frac{1}{2}$ C. I take half of the Price, which is 12s. 9d. and then collect the three Lines, the Total of which is 124l. 6s. 3d. for the Answer.

Note, From the last Example may be observed, that there is no need of too much Solicitude, concerning coming so very near by two Multiplications, for there is 7 wanting to make up the true quantity: Nay, if the two Multiplications be short by 10 or 12, it is near enough; for it is as easy to multiply the Price by 10 or 12, as by 2 or 3, and the Addition is the same.

Example 6. Once more, what comes 110 C. 3 qrs of Hops to, at 4*l.* 10*s.* 6*d.* per C.

After having multiplied by 10 and 10, which makes 100, I multiply the Price 4*l.* 10*s.* 6*d.* by ten that is wanting, which gives the same with the first Product, viz. 45*l.* 4*s.* 0*d.* which stands under the product by 100; and for the 3-q of a C. I take 3-q. of the price viz. first the half, and then the half of that half, that 2*l.* 5*s.* 3*d.* and 11. 2*s.* 7*d.* $\frac{1}{2}$, which four Lines added together make 501*l.* 2*s.* 10*d.* $\frac{1}{2}$ for the Answer.

Ans. 501 02 10 $\frac{1}{2}$

To prove Multiplication.

Whether of Simple Numbers, or of Money, it is most surely done by Division; but before that is known, take this Method, viz. As you multiplied the Multiplicand by the Multiplier, so contrarywise multiply the Multiplier by the Multiplicand; and if the Products are alike, the Work is right; or otherwise one of them is wrong, and must be gone over again till they do agree.

Example 1

365 Days in a Year.

24 Hours in a Day

1460

730

8760

Here, (reversely) I say, 5 times 4 is 20: 0 and carry 2; 6 times 4 is 24, and 2 is 26; and carry 2; and three times 4 is 12, and 2 is 14. Then 5 times 2 is 10; 0 and carry 1; 6 times 2 is 12 and 1 is 13. 3 and carry 1, and 3 times 2 is 6 and 1 is 7. Which products added together, make 8760, the Hours in a Year, without taking in the odd 6 Hours, which the Year doth consist of more than 365 Days.

56 Gal.

Example 2.

56 Gallons of Spirits at

s.	d.
3	2 p. Gallon
	7 and 8
<hr/>	
1	02 2
	8
<hr/>	
8	17 4 Answer.

I say here, twice 7 is 14. 2 & carry 1s. and 3 times 7 is 21, and 1 is 22s. or 1l. 2s. Again, twice 8 is 16d, 4 & carry 1s. and twice 8 is 16 & 1 is 17s. 17 & carry 0; and once 8 is 8l. Thus both these examples are the same in

Consequence as if you proceed in the common and regular method of Multiplication, and shews the Truth of the Operation. The next Rule in Order, is

DIVISION.


THIS Rule, though accounted the Hardest Lesson in Arithmetic, yet I shall make it easy and intelligible to the meanest Capacity.

The use of this Rule is to know how many times one Number or Sum is contained in another; as if it were asked how often is 9 contained in 54? the Answer is 6 times; or how many times 12 is there in 144? Answer 12 times.

As by *Multiplication* great Names or Denominations are brought into small; so contrarily, by *Division*, small Names are brought into greater; as Farthings (from one Gradation to another) in Pounds, Pounds Weight into Tons Weight, and Gallons Liquid, into Tons Liquid.

In this Rule we are to take particular Notice of these three certain Terms following, viz.

- 1 } *Dividend*, or Number to be divided.
- 2 } The } *Divisor*, or Number by which we divide.
- 3 } *Quotient*, or Answer to the Work; which shews how often the Divisor is contained in the Dividend.

4 The Remainder which is an uncertain Branch of this Rule, because there is sometimes a Remainder, and sometimes not.  And you must particularly note, that the *Remainder* is ever of the same Name with the *Dividend*, and is always less then the *Divisor*; for if it be more, or equal to the *Divisor*, the Work is wrong.

Division is either Single or Compound: *Single* when the *Divisor* consisteth of a single Figure, and the *Dividend* of two at most: Any of this Sort is answered by the *Multiplication Table*; as if 63 were to be divided by 7, the Answer will be 9 Times. Here 63 is the *Dividend*, 7 the *Divisor*, and 9 the *Quotient* or Answer. Com-

Compound Division is when the Dividend hath many, or more Figures or Cyphers than two, and the Divisor one or more Figures or Cyphers, &c.

Example.

How many times 7 is there contained in 365? Or, how many Weeks in a Year?

A General Rule for working. $7 \overline{) 365} \begin{matrix} 52 \\ 35 \end{matrix}$

<i>Note</i>	{	1. Seek	15
		2. Multiply	14
		3. Subtract	<hr/>
		4. Bring down	(1)

Having set down the Example with two crooked Lines, or half Parenthesis, one for the Divisor, and the other for the Quotient, I begin according to the aforementioned general Rule for Working by seeking or asking how often I can take 7 the Divisor, out of 36 the 2 1st figures of the Dividend (for I cannot take 7 out of 3, the Quotient, being never to begin with 0) and the Answer is 5 times; wherefore I place 5 in the Quotient, and multiply the Divisor 7 by it (as directed in the General Rule) saying 5 times 7 is 35, which I place under 36; and then 3dly, according to the said Rule, subtract 35 from 36, and there remains 1; to which I bring down the next or last Figure of the Dividend viz. 5, and there is 15 for a new Dividend, or Dividual to work upon; then I ask or seek again how oft 7 may be taken in 15? and the Answer is two times; wherefore I put 2 in the Quotient next to the 5; by which 2 I also multiply the Divisor 7, saying twice 7 is 14; which is set down under 15, and subtract, and there remains 1 which I place between two Semicircles thus (1) as it stands in the Work; where observe, That 365 is the Dividend, 7 the Divisor, 52 the Quotient, or Answer, and 1 the Remainder: The Quotient declares that 7 is contained in 365, 52 times and 1 over, or remaining: which I set over the Divisor, to signify that there is one seventh of a Week, or one Day more than just 52 Weeks in a Year, or 365 Days; which is easily to be found collecting the Day of each Calendar Month, as they stand in the Almanack.

(You may note, That the said one-seventh, is properly what is called a *Fraction*, or a Piece of Segment of the Dividend; but of this hereafter.

Note

Note also, That if there had been more Figures or Cyphers in the Dividend, they must all have been brought down one by one at a Time (and never but one at a Time) and (after Subtraction) set to the Remainder; and if there remains 0, you must still bring down but one Figure or 0 at a Time; and for every Figure or 0 placed in the Quotient, according to the times you can take the Divisor out of the several Dividends you make by bringing down a figure or cypher at a time out of the Dividend, till all be brought down, and the Work ended.

For a Specimen, let us divide 8060 Pounds of Tobacco equally amongst 8 Men.

8)8060(1007 Quotient

$$\begin{array}{r} 8 \dots \\ \hline 60 \\ 56 \\ \hline (4) \end{array}$$

6, to which I bring down, 0 the last of the Dividend, and it makes 60: Lastly the Eighths in 60, 7 times, and 7 times 8 is 56 from 60, and there remains 4; so the Quotient shews that each person must have 1007 Pounds of Tobacco for his Share in the Dividend 8060, and there remains 4*lb.* over and above, which makes half a Pound more due to each Man, because 4 the Remainder is half of 8 the Divisor; and so the work is done, the Quotient given to each Man being 1007 Pounds and an half for his equal Share.

Note. That in the Operation, every time that you bring down a Figure or Cypher you are to make a point under it in the Dividend, to signify that such Figure or Cypher hath been brought down and done with, as may be observed in the foregoing Example.

Though this way of working is plain and easy to be understood, yet it is somewhat tedious; and therefore I shall shew a quicker Way for Dispatch when the Divisor is a single Figure: as shall be made conspicuous in the Examples following *viz.*

	4) 78906	5) 34567	6) 29702
Quotient	19726 4	6913 (2) 5	4950 (2) 6
<i>Proof</i>	78906	34507	29702

Proof

Note

Compound Division is when the Dividend hath many, or more Figures or Cyphers than two, and the Divisor one or more Figures or Cyphers, &c.

Example.

How many times 7 is there contained in 365? Or, how many Weeks in a Year?

A General Rule for working. $7 \overline{) 365} \begin{matrix} 52 \\ 35 \end{matrix}$

Note $\left\{ \begin{array}{l} 1. \text{ Seek} \\ 2. \text{ Multiply} \\ 3. \text{ Subtract} \\ 4. \text{ Bring down} \end{array} \right.$ $\begin{matrix} 15 \\ 14 \\ \hline (1) \end{matrix}$

Having set down the Example with two crooked Lines, or half Parenthesis, one for the Divisor, and the other for the Quotient, I begin according to the aforementioned general Rule for Working by seeking or asking how often I can take 7 the Divisor, out of 36 the 2 1st figures of the Dividend (for I cannot take 7 out of 3, the Quotient, being never to begin with 0) and the Answer is 5 times; wherefore I place 5 in the Quotient, and multiply the Divisor 7 by it (as directed in the General Rule) saying 5 times 7 is 35, which I place under 36; and then 3dly, according to the said Rule, subtract 35 from 36, and there remains 1; to which I bring down the next or last Figure of the Dividend viz. 5, and there is 15 for a new Dividend, or Dividual to work upon; then I ask or seek again how oft 7 may be taken in 15? and the Answer is two times; wherefore I put 2 in the Quotient next to the 5; by which 2 I also multiply the Divisor 7, saying twice 7 is 14; which is set down under 15, and subtract, and there remains 1 which I place between two Semicircles thus (1) as it stands in the Work; where observe, That 365 is the Dividend, 7 the Divisor, 52 the Quotient, or Answer, and 1 the Remainder: The Quotient declares that 7 is contained in 365, 52 times and 1 over, or remaining: which I set over the Divisor, to signify that there is one seventh of a Week, or one Day more than just 52 Weeks in a Year, or 365 Days; which is easily to be found collecting the Day of each Calendar Month, as they stand in the Almanack.

(You may note, That the said one-seventh, is properly what is called a *Fraction*, or a Piece of Segment of the Dividend; but of this hereafter.

Note

Note also, That if there had been more Figures or Cyphers in the Dividend, they must all have been brought down one by one at a Time (and never but one at a Time) and (after Subtraction) set to the Remainder; and if there remains 0, you must still bring down but one Figure or 0 at a Time; and for every Figure or 0 placed in the Quotient, according to the times you can take the Divisor out of the several Dividends you make by bringing down a figure or cypher at a time out of the Dividend, till all be brought down, and the Work ended.

For a Specimen, let us divide 8060 Pounds of Tobacco equally amongst 8 Men.

8)8060(1007 Quotient
8...

$$\begin{array}{r} \text{---} \\ 60 \\ 56 \\ \text{---} \\ (4) \end{array}$$

Here I say the Eighths in 8 once; which I put in the Quotient then the Eighths in 0, 0 times? which I likewise put in the Quotient; then the Eighths in 6, 0 times again: which is also placed in the Quotient, and there remains

6, to which I bring down, 0 the last of the Dividend, and it makes 60: Lastly the Eighths in 60, 7 times, and 7 times 8 is 56 from 60, and there remains 4; so the Quotient shews that each person must have 1007 Pounds of Tobacco for his Share in the Dividend 8060, and there remains 4*lb.* over and above, which makes half a Pound more due to each Man, because 4 the Remainder is half of 8 the Divisor; and so the work is done, the Quotient given to each Man being 1007 Pounds and an half for his equal Share.

Note. That in the Operation, every time that you bring down a Figure or Cypher you are to make a point under it in the Dividend, to signify that such Figure or Cypher hath been brought down and done with, as may be observed in the foregoing Example.

Though this way of working is plain and easy to be understood, yet it is somewhat tedious; and therefore I shall shew a quicker Way for Dispatch when the Divisor is a single Figure: as shall be made conspicuous in the Examples following *viz.*

	4) 78906	5) 34567	6) 29702
Quotient	$\begin{array}{r} \text{---} \\ 19726 \\ 4 \\ \text{---} \end{array}$	$\begin{array}{r} \text{---} \\ 6913\ (2) \\ 5 \\ \text{---} \end{array}$	$\begin{array}{r} \text{---} \\ 4950\ (2) \\ 6 \\ \text{---} \end{array}$
<i>Proof</i>	78906	34567	29702

In the first of these Examples I say, the 4's in 7 once, and there remains 3, which is left, as if placed before 8, the next Figure in the Dividend, make 38, then the 4's in 38 9 times; 9 times 4 is 36, from 38, and there remains 2; which makes 9, the next Figure in the Dividend, 29; then the 4's in 29, 7 times; 7 times 4 is 28, from 29 and there rests 1; which makes 0, the next of the Dividend, 10, and the 4's in 10 twice; twice 4 is 8, from 10, and there remains 2; which makes 6 the Last Figure of the Dividend, 26; lastly the 4's in 26, 6 times, and 6 times 4 is 24, from 26 and there rests 2 the Remainder: And so for the other two Examples. And for Proof of the Work, (or of any other Examples) multiply the Quotient by the Divisor, and take in the Remainder in the first place or place of Units; and if the Product be the same with the Dividend, the Division is right; for I say 4 times 6 is 24, and 2 the Remainder make 26; 6 and carry 2, &c.

More Examples by a single Figure.

	3) 54221	7) 279060	9) 234567
<i>Quotient</i>	18107 (0)	39865 (5)	26063 (0)
<i>Proof</i>	54321	279060	234567

This is the shortest Way of Division that can be by a single Figure.

As it is necessary for Expedition to divide by 11 and 12, as by a single Figure, to have the Products in one Line; divide as in these Examples, *viz.*



	11) 72646206		12) 76677240
Quotient	6604200 (6) 11		6389770 12
Proof	72646206		76677240
	11) 47627000		12) 42007400
Quotient	4329927 (3) 11		3500616 12
Proof	47627000		42007400

In the first of these Examples I say, the 11's in 72, answer 6 times, &c. In the second I say, the 12's, in 76, answer 6 times, &c. In the third, the 11's in 47 4 times; 4 times 11 is 44, from 47, and there rests 3, &c. In the fourth I say, the 12's in 42, times; 3 times 12 is 36, from 42, and there remains 6, &c.

By being ready and dexterous in the Example above, you may expeditiously divide by these Numbers, viz. 110, 120, 1100, 1200, &c. for it is by cutting off, or separating the Cyphers from 11 and 12, (when these Numbers happen to be Divisors) and cutting off and separating the like Number of Figures or Cyphers from the right-hand of the Dividend, and then Divide the other Figure or Cyphers towards the Left-hand, by 11 or 12, as it shall happen; as in the Examples following, viz.

Divide 34567 by 110, and 890123 by 120, and 98765 by 1100 and 678901 by 1200.



$$11,0) 2456 | 7$$

$$12 | 0) 89012 | 3$$

Quotient

$$314 \overset{2}{11} \text{ or } \overset{27}{110}$$

$$7417 \overset{8}{12} \overset{13}{120}$$

$$11,00) 987.65$$

$$12 | 00) 6789 | 01$$

Quotient

$$89 \overset{8}{11} \text{ or } \overset{865}{1100}$$

$$565 \overset{9}{72} \overset{901}{1200}$$

When you Divide by 10, 100, 1000 or 10000, &c. you have nothing more to do than to cut off, or separate so many Figures or Cyphers of the Dividend towards the Right-hand, as you have Cyphers in the Divisor, and those Figures towards the Left make your Quotient; and those cut off towards the Right-hand the Remainder.

Examples.

Divide 123456789 by 10, 100, 1000, 10000.

By 10 the Quotient is 12345678, and the Remainder, 9.

By 100 the Quotient is 123567, and Remainder 89.

By 1000 the Quotient is 123546, and Remainder 789.

By 10000 the Quotient is 12345, and Remainder 6789.

When the Divisor consisteth of several Figures, then there ariseth a little more Difficulty in the work; but if the following Directions are heedfully attended to, the seeming Difficulty is easily overcome; in the succeeding Example, viz.

Suppose I am to divide 78901 Pounds among 32 Parishes; or suppose an Assessment of so much Money was laid on so many Parishes; what must each Parish pay by an equal Portion towards the raising such a Supply?

Divisor 32) 78901 (.... Quotient.

The Example thus set out, I begin at the Left-hand, seeking how often I can take 32 out of 78; or more easy, how many times 3 there is in 7, and the Answer is 2 times; which I place in the Quotient thus 32) 78901 (2, and according to the *General Rule of Working*, I multiply the Divisor 32, by the 2 placed in the Quotient, saying twice 2 is 4, and twice 3 is 6 so there is 64 to be taken out of 78, which should stand thus;

$$\begin{array}{r} 32) 78901 \text{ (2} \\ 64 \cdot \\ \hline \end{array}$$

14

Then I make a Point under 9, the 3 Figure of the Dividend, and bring it down to the Remainder 14, and then the work appears thus:

$$\begin{array}{r} 32) 78901 \text{ (2} \\ 64 \cdot \\ \hline \end{array}$$

14

Seeking again, I ask how many times 32 in 149; which is not readily to be answered; but how many times 3, the first Figure of the Divisor, is there in 14. the two first Figures of the Dividual, 149, and the Answer is 4 times; wherefore, after placing 4 in the Quotient, I multiply, (as directed in the General Rule) the Divisor 32 by the said 4, saying 4 times 2 is 8, placing it under 9 in the Dividual: then 4 times 3 is 12, which set down under 14; so there is 128 to be taken out of 149, and the Work appears thus:—And

$$\begin{array}{r} 32) 78901 \text{ (24 thus:} \\ 64 \cdot \cdot \cdot \\ \hline \end{array}$$

$$\begin{array}{r} 149 \\ 128 \\ \hline \end{array}$$

210

after Subtraction there remains 21; then I make a Point under 0 in the Dividend, and bring it down to the Right of the Remainder 21, and then there is 210 for a new Dividual; then, as the General Rule directs, I seek again, saying,

how many times 32, the Dividual; or easier, how many 3 in 21? But, observe well, That whenever you have a Place more in the Dividual than in the Divisor, then always seek how oft you can take the first Figure of the Divisor, out of the two first of the Dividual, and the Answer is 7 times; but it will bear 7 times, for 7 times 32 is 224, & you cannot take 224 out of 210; or rather you cannot take 22 out of 21; wherefore try in your mind before you set down the Answer, or Figure of the Quotient, whether it will go to the Number of Times as is most easily suggested; as here the Question or demand is readily answered 7 times; and so many times 3 may be taken in 21; but when you come to multiply the whole Divisor by the Times you place in the Quotient, you begin at the Right-hand, and go towards the left, carrying the Tens that arise to the next Place, which increases the Product so, that sometimes Subtraction cannot be made, because the under Line is greater than the upper; wherefore first try in

your mind as abovesaid; and since it will not bear 7 times, try if it will go 6 times; saying, 6 times 2 is 12, 2 and carry 1; & 6 times 3 is 18, and 1 is 19; & 19 may be taken out of 21; therefore set down 6 in the Quotient, next to the 4, and multiply the Divisor 32 by it, and the Work will stand thus:

$$\begin{array}{r} 32 \overline{) 78901} \quad (246 \\ 64 \dots \end{array}$$

$$\begin{array}{r} 149 \\ 128 \\ \hline \end{array}$$

$$\begin{array}{r} 210 \\ 192 \\ \hline \end{array}$$

$$\begin{array}{r} 181 \end{array}$$

Here the Divisor 32 multiplied by 6, gives 192 to be taken out of 210, and the Remainder is 18; to which, after a Point, made under it, I bring down the 1, the last Figure of the Dividend, & then there is 181 for a new Dividual; then according to the Rule, I seek again (for you are to note, That the aforesaid *General Rule for working* must be as often repeated as you bring down a Figure or Cypher from the Dividend, to make a new Dividual; and also, that for every Figure or Cypher brought down, there must likewise be a Figure or Cypher placed in the Quotient) how many times 32 the Divisor may be taken out of 181 the Dividual; or how many times 3 in 18, and the ready answer is 6 times; but on the Trial I find it will not go 6 times; wherefore I try a quotient Figure, less by 1, *viz.* 5 times, and find it will bear it; and setting 5 in the quotient next to the 6, I multiply the Divisor 32 by it, and it Produces 160; which subtracted from 181, the last Remainder is 21, and the quotient or Answer is 2465; which shews that 32 is contained in 78901, 2465 times and 21 over.

32)78901(2465
64...
149
128
210
192
181

$$\begin{array}{r} 32 \overline{) 78901} \quad (2465 \\ 64 \dots \end{array}$$

$$\begin{array}{r} 149 \\ 128 \\ \hline \end{array}$$

$$\begin{array}{r} 210 \\ 192 \\ \hline \end{array}$$

$$\begin{array}{r} 181 \\ 160 \\ \hline \end{array}$$

$$\begin{array}{r} 181 \\ 160 \\ \hline \end{array}$$

$$\begin{array}{r} 181 \\ 160 \\ \hline \end{array}$$

$$\begin{array}{r} 181 \\ 160 \\ \hline \end{array}$$

(21)

Again, admit a Nobleman hath 30,000 *per Ann.* what is his daily Income?

If you divide 30,000 by 365 (the days in the Year) the quotient will be the answer. Set it down for working thus:

$$365 \overline{) 30000}$$

First seek how many times 365 can be taken in 300? (an equal Number of places with the Divisor) answer 0 times; wherefore I to a place farther to the Right-hand in the Dividend (for 0 must never begin the quotient, as was said before) & make a Point under it, *viz.* under the last 0 but one

as may be seen in the Example; and there being a Place more in this Dividual than in the Divisor, I seek how oft the first Figures of the Divisor, viz. 3 is contained in the two first Figures or Places of the Dividend, viz. 30 and the Answer is 10 times; but you are never to take above 9 times at once, in any of these Examples of Division; wherefore try in your Mind whether it will bear 9 times, before you set it down in the Quotient (as was said before) saying to yourself, or in your Mind, 9 times 5 is 45, 5 and go 4; 9 times 6 is 54, and 4 is 58; 8 and go 5; and 9 times 3 is 27, and 5 is 32; now 32 cannot be taken out of 30, wherefore take a Figure less by a Unit or one, viz. 8 times: and finding it will go 8 times, set down 8 in the Quotient; and then say 8 times 5 is 40; 0 and carry 4; and 8 times 6 is 48, and 4 is 52; 2 and carry 5; and 8 times 3 is 24, and 5 is 29; and then there is 2920 to be taken from 3000: and after Subtraction, the Work will appear thus:

$$\begin{array}{r} 365 \overline{) 30000} \quad (8 \\ 2920 \end{array}$$

80

Then to the Remainder 80, I bring down 0, the last Figure of the Dividend, and then there is 800 for a Dividual: then you must try how oft you can take 365 out of the said Dividual 800, and the Number of places being equal in both Divisors and Dividual, to wit, 3, ask how oft 3 in 8; answer twice; so put 2 in the Quotient, and say twice 5 is 10, 0 and carry 1; and twice 3 is 6, and 1 is 7; so there is 730 to be deducted from 800, and the Remainder is 70, as in the Work may be seen, viz.

$\begin{array}{r} 365 \overline{) 30000} \quad (82 \\ 2920 \cdot \\ \hline 800 \\ 730 \\ \hline (70) \end{array}$	<p>Thus it appears that the Nobleman hath Eighty-two Pounds <i>per Diem</i>, and 70<i>l.</i> over which, if multiplied by 20, the Shillings in a Pound, would produce 1400 Shillings; which if divided by the Divisor, 365, there would come out 3<i>s.</i> a Day more, and there will be a Remainder of 305, which multiplied by 12, the Pence in a Shilling, produces 3660; which divided still by 365. gives 10<i>d.</i> a Day more: So that 30,000<i>l.</i> a Year is 1.82--3--10 a Day.</p>
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Once more, Divide 46242 Gallons by 252, the Gallons in a Tun, thus set down:

K

In

253) 46242 (113
252 ..

2104
2016

882
756

(126)

In this Example, after Enquiry, I find that it will not go twice, therefore I set down 1 in the Quotient, and place 252 under 462 of the Dividend, and after Subtraction the Remainder is 210; to which I bring down 4 from the Dividend, and the Dividual is 2104; and then seeking again, I find it will bear 8 times, which placed in the Quotient, and the Divisor 252 multiplied by it, the Product is 2016 to be subtracted from 2104; which being done, the Remainder is 88; to which 2, the last Figure of the Dividend, being brought down, there is 882, for the last Dividual; and then seeking again, I find it will go three times; and the Product of the Divisor multiplied by 3, is 756; which subtracted from 882, there remains 126 for the true Remainder: So that by this Division I find there are 183 Tuns in 46242 Gallons, and 126 remaining, or over and above, which being half of 252 the Divisor, the Remainder is half a Tun more.

When you have a Cypher or Cyphers in the Divisor, in the First, Second, or Third Place, &c. separate such Cypher, or Cyphers, with a Dash of the Pen from the rest of the Divisor; and also cut off as many Figures or Cyphers from the Right of the Dividend, as you cut off Cyphers from the Divisor, and divide the remaining significant Figures of the Divisor.

Example.

Divide 42952 Square Poles of Land by 160, the Square Poles in an Acre of Land.

16 | 0) 4295 | 2 (268
32 ..

109
96

135
128

(7)

Here the Cypher is cut off from the Divisor, and 2 from the Dividend; then I ask how oft 16 in 42; answer twice; then the 16's in 109, answer 6 times; then the 16's in 135, answer 8 times. So there are 268 Acres, and 7 remains; that is 268 Acres, $\frac{7}{8}$ or almost half an Acre.

Divide

Divide 27||00)62746|| 20(2323 ²⁵ or ²⁵²⁰
27 2700

$$\begin{array}{r}
 54 \dots \\
 87 \\
 81 \\
 \hline
 64 \\
 54 \\
 \hline
 106 \\
 81 \\
 \hline
 (25)
 \end{array}$$

In this Example, two Cyphers are separated from the Divisor, and also two Places from the Dividend, and then 62746 is divided only by 27. See the Work.

When the Divisor is 2, 4, 5, 6, or more Figures, there is a sure and easy Way of performing the Work truly, by making a Table of the Divisor; which may be done by *Addition*, or by multiplying the Divisor by 2, 3, 4, &c. Admit you are to divide 987654321, by 123456.

123456)987654321 (8000 Times.

987648...

(6321)

1	123456
2	246912
3	370368
4	493824
5	617280
6	740736
7	864192
8	987468
9	1111104

Here having noted the Number of Figures in the Divisor, which here is 6, I make a Point under the Sixth Figure or Place of the Dividend, whereby 987654 becomes the first Dividual.

The foregoing Table is made by doubling the 1st Line, which makes 246912; this added to the first or uppermost
K 2 Line,

Lines gives the 3d Line 370368; which also added to the said first Line, makes 493824 for the 4th Line, or Product; and so of the rest; still remembering to add the subsequent Line or Product to the first or uppermost Line, till you come to the last Line of 9 Times, which is 1111104; the Truth of which may be proved by multiplying the first or uppermost Line by 2, 3, 4, 5, &c. and if you commit an Error by Addition, it may be found or corrected by Multiplication.

The Use of the Table.

When you have pointed out your Number of Places in the Dividend, cast your Eye on the Table, and at the first View you may know how many times you can take, as in this Example 7 times is too little, and 9 times too much; wherefore I set down 8 in the Quotient, and place 987648, the tabular Number which stands against 8 under the Dividual, then I subtract that Number from the Dividual, and the Remainder is 6, to which I bring down 3, and place 0 in the Quotient; then to 632, I bring down 1, the Figures of the Dividend; but still it will not bear any Times or Time, wherefore I put another 0 in the Quotient, and so the Work is done, and the Quotient is 8000, and the Remainder 6321, as in the Work.

Thus having plainly, fully, and pertinently shewn by verbal Directions, the Method of Working Division, I think it unnecessary to give any more Examples in that Manner, but shall leave some few Examples for Practice Sake, whose Quotients and Remainders are expressed, but the Operation omitted, to save Room, and for Trial of the Ingenuity of Practitioners.

7400690042 divided by 987, the Quotient is 7498167, and the Remainder 2000.

479679002742 divided by 4682, the Quotient is 102298794, and the Remainder 4566.

7969767002 divided by 976294 the Quotient is 8163, and the Remainder 279080.

456589012345 divided by 9876543, the Quotient is 46249, and the Remainder 8775138.

764697 by 4500, Quotient 169, and the Remainder 9127. And 8092320000 by 345000, Quotients 23456, and remains (0)

The Proof of Multiplication and Division.

THESE two Rules reciprocally prove each other ; for in proving *Multiplication*, if you divide the Product by the Multiplier, the Quotient will be like the Multiplicand ; or if by the Multiplicand, the Quotient will be the same with the Multiplier.

Ex. I. 345
24

$$\begin{array}{r} 1380 \\ 690 \\ \hline 24 \overline{) 8280} (345 \\ 72 \\ \hline 108 \\ 96 \\ \hline 120 \\ 120 \\ \hline (0) \end{array}$$

Ex. II.

Or thus,

$$\begin{array}{r} 345 \overline{) 8280} (24 \\ 690 \\ \hline 1380 \\ 1380 \\ \hline (0) \end{array}$$

To prove Division.

Division may be proved by Division thus.

If you divide the Dividend by the Quotients, the Quotients will be your former Divisor.

Example.

Divide 8280 by 345.

$$345 \overline{) 8280} (24$$

Here the working again is needless, it being in the Page foregoing ; and shews the Truth of the Assertion, that Division may be proved by Division, as aforesaid.

But the most usual Way of proving Division is by Multiplication in this Manner, *viz.* Multiply the Quotient by the Divisor, and the Product will be equal to the Dividend. See the Example as above.

345 Quotient.
24 Divisor.

$$\begin{array}{r} 1380 \\ 690 \\ \hline \end{array}$$

8280 Proof.

Note. That when there is any Remainder, such Remainder must be taken in, or added to the Product.

114 *The Young Man's best Companion.*

As in Multiplication I gave some Examples of its Utility in Money, so likewise I shall give a few Examples in *Division of Money*; whereby may be seen how expeditiously Things may be done without having Recourse to Reduction, the Rule of Three, &c. viz.

Example I.

Divide 26*l.* 12*s.* 6*d.* equally among 5 Men: For Disposition of Working, set it down as follows:

$$\begin{array}{r} \text{l.} \quad \text{s.} \quad \text{d.} \\ 5 \overline{) 26 \quad 12 \quad 6} \end{array}$$

$$\begin{array}{r} 5 \quad 06 \quad 6 \\ \hline 30 \quad 12 \quad 6 \end{array}$$

$$\text{Proof} \quad 26 \quad 12 \quad 6$$

In the Working of this, I say, the 5's in 26, 5 times; 5 times 5 is 25, from 26, and there remains 1, that is 1 Pound, or 20*s.* which with the 12*s.* in the Place of Shillings, make 32*s.* then the 5's in the 32, 6 times; 6 times 5 is 30, from 32, and there remains 2*s.* or 24*d.* which with 6*d.* in the Place of Pence, makes 30; then the 5's in 30, 6 times; and so the work is done, and the Answer is, that each Man must have 5*l.* 06*s.* 06*d.*, for his equal Share in the said Division of 26*l.* 12*s.* 6*d.*, among 5 Persons; and the Truth of it is proved by Multiplication of Money, sufficiently shewn in the Rule of Multiplication: as here, 5 times 6 is 30; 6 and carry 2; and 5 times 6 is 30, and 2 is 32; 12 and carry 1; and 5 times 5 is 25, and 1 is 26, &c.

Example II.

Divide the Charges of a Country Feast, amounting to 1246*l.* 13*s.* 4*d.* equally among 12 Stewards, to know what each Steward must pay.

$$\begin{array}{r} \text{l.} \quad \text{s.} \quad \text{d.} \\ 12 \overline{) 1246 \quad 13 \quad 4} \end{array}$$

$$\text{Ans.} \quad 20 \quad 11 \quad 1 \frac{4}{12}$$

Here I say the 12's in 24, twice, and 12's in 6, 0 times, and there remains 6*l.* or 120*s.* and 13*s.* make 133; then the 12's in 133 is 11, and there remains 1*s.* or 12*d.* then 12 and 4 is 16, and the 12's in 16 once, and 4 remains; so that each Steward must pay 12*l.* 20*s.* 11*d.* 1 $\frac{4}{12}$ or four twelfth's of a Penny; something more than a Farthing; and this may be proved as that above.

When any Quantity is such a Number that any two Digits of the *Multiplication Table*, multiplied together, make the said Quantity or Number, then the Quotient may be very expeditiously found at two Divisions, and sooner than at one. *Example*: Divide 7872 by 32. In this Example, the

the component Parts, which multiplied together, make the Divisor 32, 4 and 8, or 8 and 4; for it matters not which of them you divide by first; for either Way will give a true, and the same Quotient, as may be seen by the different Methods of the following Work.

$$\begin{array}{r} 4) 7872 \\ \hline \end{array}$$

Or thus, 8 (7872

$$\begin{array}{r} 8) 1968 \\ \hline \end{array}$$

246 Quotient.

$$\begin{array}{r} 4) 984 \\ \hline \end{array}$$

246 Quotient.

Here though the Operations are divers, yet the Quotients are one and the same. Again, divide 44184 by 56.

Example III.

$$\begin{array}{r} 7) 44184 \\ \hline \end{array}$$

$$\begin{array}{r} 8) 6312 \\ \hline \end{array}$$

789 Quotient.

Here the Divisors are 7 and 8, or 8 and 7; for either, or both will give the same Quotient.

And thus may above forty Examples be wrought by Numbers out of the Multiplication Table; with great dispatch and Expedition, as by 15, 18, 25, 35, 64, 72, 96, &c.

When it happens that there is any Remainder in the first Division, or the last, or both, to know the true Remainder, as if you divided by the common way, take this Method, viz. multiply the first Divisor by the last Remainder, and take in, or add the first Remainder, if there be any, and the Product will be the true or the same Remainder, as if you divided by the long way. *Example* : divide 4567 by 15.

$$\begin{array}{r} 3) 4567 \\ \hline \end{array}$$

$$\begin{array}{r} 5) 1522-1 \\ \hline \end{array}$$

$$\begin{array}{r} 304-2 \\ \hline \end{array}$$

(0)

Here I multiply 3, the first Divisor, by 2, the last Remainder, and take in 1, the first Remainder, and it makes 7 for the true Remainder, as may be proved at Leisure by the other way.

The

The same Method may be taken with Respect to component parts in Division of Money, as in Division of Simple Numbers.

Example IV.

3) *l. s. d.*
Divide 463 18 06 into 18 equal parts.

6) 154 12 10

Answer 25 15 5

By this Method of Division of Money (if the Quantity be as aforesaid made by even component parts) you may, by having the price of several things, know the price or value of any thing, at the said Rate, as well by the Rule of Three: So doth Multiplication of Money answer questions in the Rule of three, when the first Number is a Unit, or one.

Example by Division.

7) *l. s. d.*
If 84lb. of Coffee cost 31 10 0 what costs 1lb.

12) 4 10 0

Answer 0 07 6

As in Multiplication of Money, to have an Answer, you multiply the price by the quantity, so in Division of Money, you divide the price by the quantity to have your Answer.

I could speak more largely if I had room, of the excellent Uses that might be made of Multiplication and Division only; but their various Uses will be better understood by their Application in the following Rules of Arithmetic, particularly in the next Rule, called

R E D U C T I O N.

WHICH is an Application of Multiplication and Division, shewing how to reduce Numbers of one Denomination to another, thereby discovering the same Value, though in different Terms.

As

As First, All great Names are brought into smaller by Multiplication, as Pounds into Shillings, Pence, or Farthings, by multiplying by 20, 12, and 4. Or Hundred Weight into Pounds Weight, by multiplying by 4 and by 28, or by 112 ; or lower, into Ounces or Drams, by 16 and 16.

2. And on the contrary, all small Names are brought into greater by Division ; as Farthings into Pounds, by dividing by 4, 12. and 20 ; and Pounds Weight into Hundreds Weight, by dividing by 28 and 4 ; the Drams into Pounds by dividing by 16 and 16.

But you may note, That Pounds are brought into Pence by multiplying by 240 ; or into Farthings, by multiplying by 960, and just the contrary by Division.

The Sense, Meaning, and Use of *Reduction*, is expressed in the following Verses.

*Reduction shews how we of Names in Use,
May great to small and small to great reduce :
So that the Answer which shall thence arise,
The given Sum in Value equalize ;
Multiply, or divide it, back you must ;
Which makes again your given Number just.*

Example I.

In 240*l.* Sterling, how many Pence ?
20 Shillings one Pound.

4800 Shillings in 240*l.*
12 Pence in one Shilling.

Ans. 57200 Pence in 240*l.*

Or thus :
240*l.*
240*d.* in a *l.*

9600
480

Answer, 57600

Example

Example II.

In 226 Tons of Copper how many Pounds Wt. ?
20 C. one Tun.

<u>4500</u> Hundred Wt. in 226 Tuns	<i>Or thus :</i> <u>226</u> Tuns
4 qrs. one C.	20
<u>18080</u> qrs. of a C. Wt. in 226 Tuns.	<u>4250</u>
28 lb. one qr. of a C.	112
<u>144640</u>	<u>54240</u>
<u>36160</u>	<u>5420</u>
<u>506240</u> Pounds Wt. in 226 Tuns.	<u>506240</u>

These foregoing Examples are great Names to be brought into small (as may easily be observed and understood) therefore as the Rule directeth, it is done by Multiplication, by multiplying the greater Name by the Number of the next lesser Name, that makes one of the said greater; as in the last Example the lesser Name to Pounds is Shillings, wherefore I multiply by 20, because 20 of that lesser Name make one of the said greater Name, *i. e.* 20 Shillings make a Pound. And the same Regard is had, and Method observed, in the Example of Weight; as is plain to be seen in the Work, and is called *Reduction descending*, because it brings higher or greater Denominations into lower or lesser.

4)

Example III.

bring 494400 Farthings into Pounds.

<u>12)</u> 123600 Pence	<i>Or thus,</i> 96 0) 49440 0 (5151.	
2 0) 1020 0 Shillings	480 ..	
515 Pounds	<u>144</u>	In this Way
	96	I divide by
	<u>480</u>	960 the Far-
	480	things in a
		Pound, &c.
	(0)	

In the first Way I divide the Farthings by 4, because four of them make a Penny, and the Quotient is Pence; then these Pence I divide by 12, because 12 of them make a Shilling, and that Quotient is Shillings; which Shillings I divide

I divide by twenty, to bring them into Pounds, thus: I cut off the Cypher in the Dividend towards the Right, for the Cypher that is in the Divisor 20, which is also separated from two with a Dash of the Pen (as may be seen in the Work) then I halve the Figures one by one, as they are united with the Remainder in the Dividend; which half is Pounds, and is a short way of dividing by 20; in the Example I say, the half of 10, (because I must not set down 0 at the beginning) is 5, and the half of 3 is but one, which makes the next, which is 0, 10; and the half of ten is five; so that 10300 Shillings make 515 Pounds, or there are so many Pounds in 494500 Farthings.

Note, In dividing by twenty, as above, if any thing remains, it must be joined or annexed to the Figure or Cypher cut off; as suppose there had in the halving the last Figure, (excepting what you cut off) remained one; then that one must have been joined with the Cypher separated or cut off, and there would have been ten Shillings.

Example IV.

Reduce 27552 Pounds Weight into Hundreds Wt.

$$\begin{array}{r}
 28) 27552 \quad \overset{4)}{(984} \\
 \underline{232} \\
 235 \\
 \underline{224} \\
 112 \\
 \underline{112} \\
 (0)
 \end{array}
 \quad 246 \text{ C. wt. Answer.}$$

Or thus:

$$\begin{array}{r}
 112) 27552 \quad (946 \text{ Answer.} \\
 \underline{214} \\
 515 \\
 \underline{488} \\
 672 \\
 \underline{672} \\
 (0)
 \end{array}$$

In the first of the two foregoing Examples, I divide the Pounds by 28 to bring them into Quarters; then I divide those Quarters by 4 to bring them into Hundreds Weight, as in the Work.

In the second Way, I divide the Pounds Weight by 112, the Pounds in a C. Weight, and it brings the Pounds Weight into Hundreds Weight at once.

The said Examples are of so small Denominations to be brought into greater; and therefore according to the second Rule of Direction, it is done by Division, by dividing the

the lesser Name by as many of them as make the next greater Name ; that is by 28, because 28 of them make one of the next greater Name, *viz.* a Quarter of a Hundred, and this Reduction is called *Reduction Ascending*, because it brings low or small Names to higher or greater Denominations ; by which may be observed, That all Questions in Reduction, whether ascending or decending, are answered either by Multiplication or Division, or by both ; as will plainly appear in the sundry Examples of reducing of divers Denominations to others.

When it is required to reduce Numbers of several Denominations by Reduction Ascending, or by Multiplication, you are to work as before ; but you must always remember to take in such Numbers as stand in the place of the next inferior Denomination, as when you multiply the Pounds by Twenty, if there be any Shillings in the Denomination or place of Shillings, you must take them in ; so likewise when you multiply the Shillings by twelve, if there be any Pence in the place of Pence, you must also take them in ; and so when you multiply the Pence by 4, to bring them into Farthings, you must take in the Farthings if there be any, in the place of Farthings as in the following Work.

Example V.

l. s. d.
In 346 16 9 halfpenny how many Farthings?
20 Shillings one Pound.

6936 Shillings in 346l. 16s.
12 Pence one Shilling.

83241 Pence in 346l. 16s. 9d.
4 Farthings one Penny.

33266 Farthings in 346l. 16s. 9d. halfpenny.

The Example is so plain in the Work, that it hardly needs any Explanation ; but I begin to say 0 is 0, but 6 in the Units of Shillings is 6 ; then twice 6 is 12, and 1 in the tens of shillings is 13, 3 and carry 1 ; and twice 4 is 8, and 1 is 9 ; and twice 3 is 6 ; then by 12, saying 12 times 6 is 72, and 9d. in the place of Pence, is 81, 1 and carry 8 ; and 12 times 3 is 36, and eight is 44, 4 and carry 4 ; and 12 times 9 is 108, and 4 is 112, two and carry

carry eleven; and twelve times six is seventy-two; and eleven is eighty-three, &c.

Example VI.

C. qrs. lb.
In 56 2 16
-----4 qrs. one C.

226 qrs. in 56 C. two qrs.
28 lb. one qr. of a C:

1814
453

Ans. 6344 Pounds Wt. in 56 C. 2 qrs. 16lb.

In the foregoing Work, I must multiply the 56 C. by four and take in two quarters, and then I multiply the two hundred and twenty-six-qrs. by twenty-eight, saying eight times six is forty-eight, and 6, the Unit Figure in the odd Pounds, is fifty-four and carry five, &c. Then I multiply by two, saying, twice six is twelve, and one (that stands in the place of Tens in the odd Pounds) is thirteen, three and carry one, &c.—Then adding the two Products together, they make 6344 Pounds, contained in fifty-six C. two qrs. sixteen lb. as in the Work is conspicuous. Or, the Example may be sooner done, by multiplying the 56 C. by 112, the Pounds in a C. Weight, & taking in the odd Weight, viz. 2 qrs. 16lb. or seventy-two Pounds at once.

C.
56
112

672
56,72 odd Wt.

6344

I say here 12 six is seventy-two, two and carry 7; and twelve times five is sixty, and seven is sixty-seven; then once six is six, setting it down in the third Place, because by multiplying by twelve at once, two places are taken up. See the Work.

Or still briefer thus, by setting down the 56 C. four several times in the following Manner, taking in the odd Weight as before.

L

56 C

$$\begin{array}{r}
 56 \text{ C.} \\
 56 \\
 56 \\
 \hline
 56,72
 \end{array}$$

The same as above viz. 6344 Pounds.

Reduction Ascending.

Is the bringing Numbers from a lesser Denomination to a greater, and is the Reverse of *Reduction descending*; and each may serve as a Proof to the other, one being performed by Multiplication, and the other by Division.

And note, That when at any time in *Reduction Descending* you take, or add to, the odd Money, Weight, or Measure, as you multiply the several Denominations such Quantities will be the the Remainders in *Reduction Ascending*.

4) *Examples by the two foregoing Sums.*
In 332966 Farthings how many Pounds?

12) 83241 ---halfpenny, remains what taken in.

2,0) 693,6--9d. remains what taken in.

346---16s. remains what taken in.

So that in 332966 Farthings there are 346*l.* 16*s.* 9*d.* halfpenny, and is a sure Proof of the foregoing Work descending.

Again, in 6344 Pounds Weight, how many Hundreds Wt.

$$\begin{array}{r}
 4) \\
 28) 6344 \text{ (226 qrs.} \\
 56 \dots \text{---} \\
 \hline
 \end{array}$$

74 56 C. two qrs. taken in.
56

184
168

(16) remain Pounds taken in.

So that in 6344 Pounds Wt. there is 56 C. 2 qrs. 16*lb.* & proves the foregoing Examples descending to be right.

Now follow promiscuous Examples of both kinds of Reduction, one proving the other.

The Young Man's best Companion 123

In 276*l.* 12*s.* how many Pence.

$$\begin{array}{r} 20 \\ \hline 5532 \\ 12 \end{array}$$

$$\begin{array}{r} 12 \\ \hline \text{In } 66384*d.* \text{ how many Pounds?} \\ 2||0)553||2 \end{array}$$

Ans. 66384*d.* *Ans.* *l.* 276||12 and Proof,
In 47964 Grains, how many Pounds *Troy*?

$$\begin{array}{r} 20 \\ 24) 47964 (199||8 \\ 24 \cdots 12)99 \text{ 18 Pwts.} \end{array}$$

239 In 8*lb.* 3*oz.* 18*grs.* 12 *grs.* how many Grains?

216	12
236	99
216	20
204	1998
192	24

$$\begin{array}{r} \text{Gr. (12)} \quad 7994 \\ 3997 \end{array}$$

Answer 57964 and *Proof*.

In thirty-four C. three-qrs. of Cotton Wool, how many Pounds?

$$\begin{array}{r} 6 \\ 34 \\ 34 \\ 34 \\ 34||84 \\ \hline 3892 \text{ lbs.} \end{array}$$

$$\begin{array}{r} 6 \\ 112) 3892 (34 \text{ C. } \frac{3}{4} \text{ Proof.} \\ 336 \cdot \\ \hline 532 \\ 448 \\ \hline \end{array}$$

(84) *lb.* or $\frac{3}{4}$ of a C.

In 456 C. $\frac{1}{4}$. 27 lb. of Copper how many Pounds? And what comes it to at 21d per pound.

$ \begin{array}{r} 456 \text{ C.} \\ 456 \\ 456 \\ 436 \\ \hline 111 \end{array} $	<p>Or thus</p> $ \begin{array}{r} \text{C.} \\ 456 \\ 112 \\ \hline \end{array} $
$ \begin{array}{r} 51183 \text{ Pounds.} \\ 21d. \text{ p. lb.} \\ \hline 51183 \\ 102366 \\ \hline \end{array} $	$ \begin{array}{r} 5472 \\ 456 \\ \hline 111 \\ \hline 511833 \text{ Pounds.} \\ \hline \end{array} $

1074843 Pence; which bring into Pounds by Division or Reduction Ascending, as before shewn, and it will amount to 4478l. 10s. 3d.

Bring 4796 Ells Flemish into Ells English; multiply by 3 3 and divide by 5, because $\frac{3}{4}$. make and Ell Flemish, and five an Ell English.

$$\begin{array}{r}
 5) 14388 \\
 \hline
 2877 \frac{3}{4}
 \end{array}$$

Reduce 456 Ells English into Yards; multiply by 5, & divide by four, thus:

456 English Ells.	
5 qrs 1 Eng. Ell. In 570 Yds. how many Eng. E.	
$ \begin{array}{r} 4) 2280 \text{ qrs.} \\ \hline \end{array} $	$ \begin{array}{r} 4 \text{ qrs. 1 Yd.} \\ \hline 5) 2280 \\ \hline \end{array} $
Yds. 570 <i>Answer.</i>	$ \begin{array}{r} 456 \\ \hline \end{array} $
<u>English Ells 456 Answer and Proof.</u>	

Bring

The Young Man's best Companion. 125

Bring 130 Tuns of Wine into Gallons.

4 Hoghead one Tun.

Or thus:

520

63 Gallons 1 Hoghead.

212 Gallons one Tun.

130 Tuns

1560

3120

7560

252

Ans 32760 Gallons

32760

	<i>Lasts.</i>	<i>Quarters.</i>	<i>Bushels.</i>	<i>Pecks.</i>
Reduce	42	3	5	2 into Pecks
	10 qrs. 1 Last.			

423

8

3389

4 Peck one Bushel.

Here I multiply by ten, and take in three qrs. and then by 8, and take in 5 Bushels; and lastly by four, and take in two Pecks.

13558 Pecks in forty-two, Lasts. 5 Bushels and 2 [Pecks]

4)

In 13558 Pecks how many Lasts, &c.

8) 3389-two Pecks taken in

110) 42||3--5 Bushels taken in.

Lasts, 42-three-qrs. taken in

Ans. 42 Lasts, three-qrs. 5 Bushels, and two Pecks.

By R E D U C T I O N also.

Foreign Coins or Exchanges may be reduced to Sterling Money; and on the contrary, Sterling Money to Foreign



Examples.

Reduce 246 *Venetian Ducats de Banco* into Sterling Money the Exchange at 5*d.* Sterling per Ducat, thus:

$$\begin{array}{r} 246 \\ 52 \\ \hline 492 \\ 1230 \end{array}$$

12792 (12)

2||0) 106)6

£. 53, 6 To be paid in London,
for the 246 Ducats drawn in Venice,

Reduce 53*l.* 6*s.* Sterl. into Ducats at 5*d.* Sterl. per Ducat

20

1066

12

52) 12792 (246 Ducats to be paid in Venice for 53*l.* 6*s.*
104 drawn in London.

23, &c.

To reduce *Flemish* Money into Sterling Money, divide the Pence *Flemish* by the Course of Exchange, suppose 33*s.* 4*d.* and the Quotient will be the Sterling Money; and what remains multiply by 20, &c.

Example.

In 242*l.* 13*s.* 4*d.* *Flemish*, how many
20 Pounds Sterling, &c.

$$\begin{array}{r} 33s. 4. \text{ Flemish} \\ 12 \\ \hline 400 \end{array} \quad \begin{array}{r} 4853 \\ 12 \\ \hline 4||00)582||40(145 \\ \hline \text{Remains } 240 \\ 20 \\ 4||00)48||00(12 \end{array}$$

Answer 105*l.* 12*s.*

By the Work it appears, that 145*l.* 12*s.* Sterling answers or is equivalent to 242*l.* 13*s.* 4*d.* *Flemish*, at 33*s.* 4*d.* *Flemish* per Pound Sterling.

Thus

Thus *Flemish* Money may be reduced to Sterling Money tho' the Course of Exchange may be at any Rate of Shillings and Pence *Flemish*; but when at the Rate above, viz. 34s. 4d then the Answer is sooner found by multiplying by 3, and divide by 5; for 400d. *Flemish* is the same to 240d, Sterling (each being a Pound) as 5 is to 3, for if you divide 400 by 5 it quotes 80; so 240, dividing by 3 quotes the same.

The foregoing Example done by the last proposed Way.

l. 242--13--4 *Flemish*

3

5) 728--00--0

l. 145--12--0

Note, *French* Money is reduced to Sterling, viz. *Livres, Sols, Deniers*, (or *French* Pence) as Sterling and *Flemish* Money by multiplying by 20 and 12.

In 426 *French* Crowns, each 54d. farthing, Sterling how many Pounds Sterling?

<p>426 54 — 1704 2130 106 — 12 23110: 10d. — 2 0) 192 5 10d.</p>	<p>In this Example the Number of Crowns is multiplied by 54d and for the $\frac{1}{4}$ I take the fourth Part 426, which is 106 $\frac{3}{4}$ of a Penny or a Half-penny; which added to the other Pence gives for Total 23110d. which divided by 12, quotes 1925: & 10d. remains; so the Answer is 96l. 5s. 10d. $\frac{1}{4}$ Sterling as in the Work,</p>
---	---

Ans. l. 96:5: 10d.

Again bring 1600 Pieces of Eight, at 54d. 1 farthing Sterling into Pounds Sterling.

1600

1600
54

6400
8000
400

12)16800 Pence.

2|0)723 3---4

l. 361 13 4

Here the 1600 Pieces of Eight are multiplied by fifty-four, to bring them into Pence, and for the $\frac{1}{2}$ I take the $\frac{1}{2}$ of 1600, &c. as in the Work; and the Answer is 361*l.* 13*s.* 4*d.*

This Method is of Use in reducing the Exchanges of *Cadix*, *Leghorn* and *Genoa*. Or when the Exchange is at so many Pence and eighths of a Penny, (as often the Exchanges run) then multiply the given Number to reduce it into Pence, by the Pence contained in a Peice of Eight; and also multiply the said given Numbers apart, by the Numerator or upper Figure of the Fraction, and divide by the Denominator or under Figure of the Fraction, and the Quotient will be Pence; which add to the other Pence produced by multiplying the given Number by the Pence contained in one of the Pieces for Exchange, then divide the Total Pence by 12, &c.

Example.

Bring 296 Dollars at 5*d.* $\frac{1}{2}$ Sterling into Pounds Sterling.

296
52

592
1480

15392
185

12)15577

2|0) 129||8 1*d.*

296 Dollars..

5

8) 1410

185

Answer 164:18:1 Sterling Money due for 296 Dollars, at 5*d.* $\frac{1}{2}$ Sterling per Dollar.

But

But *Ducats, Dollars, Crowns, Millreas, &c.* are more expeditiously cast up by the Rules of Practice hereafter to be shewn.

And so much for *Reduction*. The next Rule in *Arithmetic*, is
The GOLDEN RULE or RULE of THREE.

IT is called the *Golden Rule* from its excellent Performance in *Arithmetic*, and in other Parts of *Mathematical Learning*.

And it is called the *Rule of Three*, because from three Numbers given, proposed or known, we find out a fourth Number required or unknown, which bears such proportion to the third, as the second doth to the first Number; from whence also it is called the *Rule of Proportion*.

And of this Proportion there are two sorts; one called *Direct*, the other *Indirect* or *Reverse*.

Direct proportion is when the second and third Number are to be multiplied together, and their Product divided by the first.

Indirect or Reverse Proportion, is when the first and second Numbers are to be multiplied together, and their Product divided by the third.

In *Direct Proportion*, the fourth Number, or Answer to the Question contains the third Number as often (or as many times) as the second contains the first.

But In *Indirect Proportion*, the greater the third Number is, the less is the fourth; and the lesser the third Number is, the greater is the fourth.

The Stating the Question.

The chief Difficulty that occurs in the *Rule of Three* is the right placing the Numbers, or stating the Question; for when that is done, you have nothing more to do, but to multiply and divide, and the Work is done.

And to this End, we are to remember that of the three given Numbers, two of them are always of one Name or Denomination, and the other Number is ever of the same Name with the fourth Number or Answer required; and must always be the second or middle Number: And the Number that asketh the Question, must still possess the third or last place, and the other Number of the same Name with the third, must be the first Number; For the first and third Number must always be of one name, viz. both Money, both Weight, both Time, or both Measure. And
though

though they be of one kind, yet if one of them is altered, by Reduction, from a higher to a lower Name then the other must be reduced to the same. For you must particularly Note. That if either the first or third Numbers consist of several Denominations, that is, of Pounds and Shillings; or Pounds, Shillings, and Pence; or of Pounds, Shillings, Pence, and Farthings; or of Tuns, Hundreds, Quarters, and Pounds, &c. then must they be reduced to the lowest Name mentioned. And if any one happens to be of divers Denominations, and the other but of one Name; then the Number of one Name must be reduced as low, or into the Name with the other. As suppose the first Number is brought into Farthings, then the third Number, though but Pounds, must be brought into Farthings, also. Then you are to multiply the second and third Numbers together, (when the proportion is Direct) and Divide the Product by the first Number, and the Quotient thence arising will be the Answer to the Question, and in the same Name with the middle Number: And if in a small Denomination, it must be brought by Division to the highest Name, for the better understanding the Answer, You must also Note, That if the Middle Number be of several Denominations, it must be brought into the lowest mentioned.

Example.

If 12 Gallons of Brandy cost 4*l.* 10*s.* what will 134 Gallons cost at that Rate? Stated for Working thus

Gal.	<i>l.</i>	<i>s.</i>	Gal.
If 12-----	4-----	10-----	134
	20		90
	<hr/>		<hr/>
	90	12) 12060	
		<hr/>	
		2 0) 100 5	
		<hr/>	
		<i>l.</i> 50 5	
		<hr/>	

Here the first and third Numbers are like Names, viz. both Gallons; and 134 being the Number that asked the Question, it hath the third Place as it always must, as before asserted? and 4*l.* 10*s.* the second Number, being of two Denominations, viz. Pounds and Shillings, it is reduced into the lowest mentioned, viz. Shillings as before directed, and then the three Numbers are these, viz. 12-90-134, and 134 the third Number being multiplied by 90, the second

cond Number produces 12060; which divided by 12, the first Number quotes 1005, which are Shillings, because 90, the middle Number, were Shillings, and 1005 Shilling, divided by 20, gives 50*l.* 5*s.* for the Answer; and for the Proof of its Truth, state it back again thus:

Example.

Gal.	1.	s.	Gal.
If 134 cost	50	5	what 12
	20		

1005
12

134) 12060 (90*s.* Ans. or 4*l.*

1206

10*s.* the Cost of 12 Gal.
and is a sure Proof of the

first Work; and the back-stating and working the Proof is as much a Question in the Rule of three as the first.

By the foregoing Rules & Directions, and these two Operations, you must understand the Nature of the Rule and Method of working; and with Ease and Certainty answer any Example proposed in the Rule of Three direct, and therefore I shall omit what I can of verbal Directions, and abate as much of Figure-work as is consistent with Dispatch and of not leaving the work too obscure, to save Room, & not to be too prolix; and to this End, I shall only give the Examples stated, and a little of the work, and the Answer to the Questions, leaving most of the Operations to be performed by the ingenious Practitioners.

Example III. If 56*lb.* of Indigo cost 11*l.* 4*s.* what will 1008*lb.* cost at that Rate;

lb. *s.* *lb.*

If 56-----224-----1008? Answer, 4032*s.* or 201*l.* 12*s.*

Example IV. If half a C. Wt. of Copper cost 4*l.* 8*s.* what Quantity will 14*s.* buy at that Rate?

s. *lb.* *s.*

If 98 buy 55, what 14?

Example V. If 4 C. $\frac{3}{4}$ Sugars cost 5*l.* 15*s.* 7*d.* what will four Hogheads come to, weighing 42 C. 1 qr. 14*lb.*

lb. *d.* *lb.*

If 542-----1387-----4746 Ans. 12373 Pence, or 51*l.* 11*s.* 1*d.* And the Remainder, 266, multiplied by four, gives 1064; which also, divided by the first Number, 532, gives a Halfpenny more; so the whole is 51*l.* 11*s.* 1*d.* $\frac{2}{3}$.

Any

Any of these Examples, or any other, may be proved by a Back-stating, according as the first Example was proved; and each Proof becomes another Question in the Rule of Three as was said before.

Example VI. If I have 50l. a Year Salary, how much is due to me for 144 Days Service at that Rate ?

Days.	l.	Days.
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
30	30	30
31	31	31
32	32	32
33	33	33
34	34	34
35	35	35
36	36	36
37	37	37
38	38	38
39	39	39
40	40	40
41	41	41
42	42	42
43	43	43
44	44	44
45	45	45
46	46	46
47	47	47
48	48	48
49	49	49
50	50	50
51	51	51
52	52	52
53	53	53
54	54	54
55	55	55
56	56	56
57	57	57
58	58	58
59	59	59
60	60	60
61	61	61
62	62	62
63	63	63
64	64	64
65	65	65
66	66	66
67	67	67
68	68	68
69	69	69
70	70	70
71	71	71
72	72	72
73	73	73
74	74	74
75	75	75
76	76	76
77	77	77
78	78	78
79	79	79
80	80	80
81	81	81
82	82	82
83	83	83
84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
93	93	93
94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

If 365-----50-----144? Answer, 1.19-14-6 $\frac{90}{365}$ parts of a Penny

In this Example, the Product of the third by the second Number is 72200; which divided by the first 365 (according to the Rule) quotes 19 Pounds the Name of the middle Number, and there is a Remainder 265; which multiplied by 20, according to Reduction, and the Product still divided by 365, there comes out 14 Shillings; and yet there is a Remainder of 190, which multiplied by 12, and the Product divided by 365, gives 6d. and there's a Remainder 90; which if multiplied by four, (the last inferior Name) and divide by 365, yet would not come to a Farthing more; so that the Answer is as above 19-14-6 $\frac{20}{365}$.

You are to note, That when any thing remains that is reducible to an inferior or lower Name, after multiplied as above, it must continually be divided by the first Number.

Note also When the first of the three given Numbers is an unit or One, the Work is performed, or Answer found, by multiplication.

Example VII. If I am to give 17*s.* for 1*lb.* of Belladine Silk, what must I give for 264*lb.* at that Rate?

lb. s. lb.

If 1-----17 ----264.

17

Answer 4488s. or 224l. 8s.

Example VIII. If I buy 49 Bags of Hops at 12*l.* 12*s.* 6*d.* per Bag, what come they to that Rate?

Bag.

l s d.

12--12--6--49

7 and by 7

88--07--6

7

618--1--62

The foregoing Work is performed by the component Parts, as taught in Multiplication.

When the 3d, or last, of the three given Numbers is an Unit, or One, then the Work is performed by Division.

Example IX. If 12 Ells of Holland cost 3*l.* 6*s.* what is the price of 1 Ell at that Rate?

Ells.	12 <i>s.</i>	Ell.	
If 12	66	1	Answ. 5 <i>s.</i> 6 <i>d.</i>

$5 \frac{6}{12}$ or 5*s.* 6*d.*

Example X. If 56 Yards of Broadcloth cost 40*l.* 12*s.* what comes a Yard to at that Rate?

Yds.	7 <i>l.</i> 12 <i>s.</i>	Yd.	
If 56	40—12	1	Answ. 14 <i>s.</i> 6 <i>d.</i> per Yard.

8)5—16

14—6*d.* Answer.

This Example is wrought by *Division of Money*, and by component Parts; as before taught in the Rule of Division.

Example XI. If *A* owes *B* 296*l.* 17*s.* and compounds at 7*s.* 6*d.* in the Pound; what must *B* take for his Debt?

s. d. s.

If 20--90--5937 Answer *l.* 111--6--4 $\frac{1}{2}$.

Example XII. If a Gentleman hath an Estate of 500*l.* a Year, what may he expend daily, and yet lay up 12*l.* 15*s.* per Month?

First multiply 12*l.* 15*s.* by 12, the Months in a Year, and it makes 153*l.* which deducted from 500*l.* the Remainder is 347*l.* Then say,

Days. l.

If 365—347, what 1 Day? Answer 19*s.*

After you have reduced the Pounds into Shillings which make 6940, you divide them by 365, and the Quotient is 19*s.* per Day.

The Rule of Three Reverse, or of Indirect Proportion.

WHAT *Indirect Proportion* is, has been hinted already.

In *Direct Proportion*, the Product of the 1st and 4th Numbers, is equal to the Product of the 2d and 3d.

But in this Proportion, the Product of the 3d and 4th Numbers is equal to the Product of the 1st and 2d.

M

The

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The Method of stating any Question in this Rule, is the same with that of the *Direct Rule*.

For the 1st and 3d Numbers must be of one Name, and so reduced, as in that Rule; and the Number that moves the Question must possess the 3d Place; and the Middle Number will be of the same Name with the Answer, as it is there.

To know when the Question belongs to the Direct, and when to the Reverse Rule.

When the Question is stated as abovesaid, consider whether the Answer to the Question ought to be more or less than the 2d Number; if more, then the lesser of the 1st and 3d Numbers must be your *Divisor*.

But if less, then the greater of the two extreme Numbers must be your *Divisor*.

And if the 1st Number of the Three is your *Divisor*, then the *Proportion* is *Direct*; but if the last of the Three is your *Divisor*, the *Proportion* is *Indirect* or *Reverse*.

Or without Regard either to *Direct*, or *Reverse*:

If more is required, the lesser; { is the Divisor.
If less the greater.

Examples for Explanation.

Example I. If 4 Men plane 250 Deal-Boards in 6 Days, how many men will plane them in two Days?

If 6 Days require 4 Men, what 2 Days? *Answer* 12 Men.

$$\begin{array}{r} \hline 2) \quad 24 \\ \hline 12 \text{ Ans.} \\ \hline \end{array}$$

Example II. If a Board be 9 Inches broad, how much in Length will make a Square Foot?

In. B. In L.
If 12 ————— 12, what 9 Inches broad?

$$\begin{array}{r} \hline 9) \quad 144 \\ \hline \end{array}$$

Answer 16 Inches in Length.

In these Examples, the 1st and 2d Numbers are multiplied together, and the Product is divided by the 3d ; for in the first Example, it is most certain, that 2 Days will require more Hands to perform the Work than 6 Days ; therefore the lesser of the extreme Numbers is the Divisor ; and declares the Question is in *Indirect Proportion*.

Likewise, in the Second Example, 9 Inches in Breadth, must needs require more in Length to make a Foot, than 12 Inches in Breadth ; wherefore it is in the same Proportion with the first Example, because the *Divisor* is the 3d Number.

Example III. How many Yards of Sarcenet, of $\frac{3}{4}$ wide, will line 9 Yards of Cloth, of 8 qrs. wide ?

Qrs. wide. yds. long. qrs. wide.

If 8 ————— 9 what ————— 3

8

Here the narrower the Silk,
the more in Length is required.

3) 72

Yards 24

Example IV. If a Quartern Loaf weighs 4 Pounds and a Half, when Wheat is 5s. 6d. the Bushel, what must it weigh when Wheat is 4s. the Bushel ?

d. Half lb. d. lb.

If 66 ————— 9 ————— 48 Answ. $6\frac{2}{3}$.

Example V. If in 12 Months 100l. Principal gain 5l. Interest ; what Principal will gain the same Interest in 5 Months ?

M. l. P. M.
12 ————— 100 ————— 5

12

5) 1200

Answer, 240l. Principal.

The Double Rule of Three Direct.

IN this Rule there are 5 Numbers given to find out a 6th, which is to be in Proportion to the Product of the 4th and 5th Numbers, as the 3d Number is the Product of the 1st and 2d Numbers.

Questions in this Kind of Proportion are wrought either by two Operations in the *Single Rule of three Direct*, or by the

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the Rule composed of the 5 given Numbers, and the one may be a Proof to the other ; as may be seen in the Example following.

Example I.

If 100 Pounds Principal, in 12 Months, gain 5 Pounds Interest, what will 246*l.* Principal gain in 7 Months ?

If 100 gain 5, what 246

$$\begin{array}{r} 5 \\ \hline 1,00 \overline{) 12 \mid 30} \\ \underline{20} \end{array}$$

1 | 00 6 | 00 Answer 12*l.* 6*s.*

M. *l.* *s.* *M.*
Then say again, if 12 gain 12—6 what 7?

$$\begin{array}{r} 20 \\ \hline 246 \\ 7 \\ \hline 12 \overline{) 1772} \\ \underline{240} \\ 2 \mid 0 \overline{) 14 \mid 36} \\ \underline{14} \\ l. \ 7 \ 3 \ 6 \end{array}$$

In the first Stating, the Answer is, that if 100*l.* gain 5 Pounds, then 246*l.* will gain 12 Pounds 6 Shillings.

Then I say in the next Stating, if 12 Months gain 12*l.* 6*s.* what will 7 Months gain ? and the Answer is, 7*l.* 3*s.* 6*d.* And so much will 246*l.* gain in 7 Months, if 100*l.* gain 5*l.* in 12 Months.

You must particularly note, That in all Operations where the Answer to the Question is found by two Statings of the *Rule of Three*, the Answer of the first Stating is ever the middle Numbor of the second Stating ; as in the preceeding Example.

The

The foregoing Question may be answered by a Stating composed of the 5 given Numbers, thus :

$$\begin{array}{ccccccccc}
 (1) & & (2) & & (3) & & (4) & & (5) \\
 l. & & M. & & l. & & l. & & M. \\
 \text{If } 100 & \text{---} & 12 & \text{---} & 4 & \text{---} & 246 & \text{---} & 7 \\
 & & 12 & & & & 7 & & \\
 \hline
 & & 1200 & & & & 1722 & & \\
 & & & & & & 6 & &
 \end{array}$$

In this Work the stating the Question, the first and fourth Numbers are made of 1 name and the 2d and 5th ; then the two first Numbers are multiplied together for a Divisor, and the last 3 Numbers are multiplied together for a Dividend, and the Quotient or Answer is of the same Name with the Middle Number, *viz.* Pounds interest. In the work I find the first Quotient 7 Pounds interest : And so I proceed from one Denomination to another, till I find the same Answer as in the Work at two Statings, *viz.*

$$\begin{array}{r}
 1200 \overline{) 8610} \text{ (7l.} \\
 \underline{8400} \\
 210 \\
 \underline{20} \\
 10 \\
 1200 \overline{) 4200} \text{ (3s.} \\
 \underline{3600} \\
 600 \\
 \underline{12} \\
 1200 \overline{) 7200} \text{ 6d.} \\
 \underline{7200} \\
 0
 \end{array}$$

l. 7 3 6

This Method of Operation serves to answer all Questions in the *Double Rule of Three Direct.*

The Double Rule of Three Reverse.

IN this Rule you must place your Numbers in such Order that your 2d and 4th Numbers may be of one Name, or Denomination, and your 3d and 5th.

Example.

If 100*l.* Principal, in 12 Months, gain 6*l.* Interest, what Principal will gain 20*l.* in 8 Months?

M 3

Stated

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Stated thus :

(1)	(2)	(3)	(4)	(5)
l. P.	Mo.	l. Int.	Mo.	l. Int.
If 100	12	6	8	20
12			6	
<hr/>			<hr/>	
1200			48 the Divisor.	
20				
48) 24000 (500l. Principal. Answer.				
240				
<hr/>				
(0)				

In this Work the 3d and 4th Numbers are multiplied together for a Divisor ; and then the first is multiplied by the 2d, and that Product by the 5th Number, and the Product 24000 is divided by 48, and the Quotient is 500l. Principal ; which is the Answer to the Question, may be seen in the Work.

RULES of PRACTICE.

THESE Rules are so called from their frequent Use and Brevity in casting up most Sorts of Goods or Merchandize.

Note, That any Question in the Rule of Three, when the first Number in the Stating, is 1, is more briefly done by the Rule called Practice.

But previous to these Rules, it necessary to have the following Tables by heart :

Parts of a Shilling.		Of a Pound.	Parts of a Pound.	
d.			s.	d.
6 is $\frac{1}{2}$	or	$\frac{1}{40}$	10 0 is $\frac{1}{2}$	
4 $\frac{2}{3}$		$\frac{1}{60}$	6 8 $\frac{1}{3}$	
3 $\frac{1}{4}$		$\frac{1}{80}$	5 0 $\frac{1}{4}$	
2 $\frac{1}{6}$		$\frac{1}{120}$	4 0 $\frac{1}{5}$	
$\frac{1}{2}$ $\frac{1}{8}$			3 4 $\frac{1}{6}$	
$\frac{1}{4}$ $\frac{1}{16}$			2 6 $\frac{1}{8}$	
			2 0 $\frac{1}{10}$	
			1 8 $\frac{1}{12}$	
			1 0 $\frac{1}{20}$	

Part

Parts of a Shilling.

Example I.

6d. is $\frac{1}{2}$ | 426 lb. of Sugar, at 6d. per lb.

of 1s. |

2 | 0) 21 | 3

l. 10—13 Answer.

Here 6d. being the price of each lb. and the half a Shilling; therefore the half of 246 is taken, and gives 213s. or 10l. 13s.

Example II.

4d. is $\frac{1}{3}$ | 512 lb. of Cheese, at 4d. per lb.

of 1s. |

2 | 0) 17 || 0—8d.

l. 8, 10, 8 Answer.

Here 4d. is the $\frac{1}{3}$ of a Shilling; therefore the third part of 512 is 170s. and $\frac{2}{3}$ of a Shilling or 8d. remains.

Note, Always that the Remainder is of the same Name with the Dividend, which here is Groats, for the Pounds of Cheese are a Groat each.

Example III.

3d. is $\frac{1}{4}$ | 246 Yards of Ribband, at 3d. per Yard.

of 1s. |

2 | 0 6 | 1—6d.

l.--3---1---6 Answ.

Here the Yards are divided by 4, because 3d. is the 4th of a Shilling, and it quotes 61s. and 2 remains, or 2 three-pences: So the Answer is 3l. 1s. 6d.

And thus many any proposed Question be answered belonging to the first Table, or *Parts of a Shilling*; that is, by dividing the given Number by the Denominator of the Fraction, and the Quotient will be always Shillings, which (the Remainders being known as above) bring into Pounds, by dividing by 20, &c.

When the price of the Integer is at a Farthing, a Half-penny or three Farthings more than the Value of the Pence mentioned, then for those Farthings take a proper part of the foregoing Quotient found for the Pence, and add them together.

Examples.

Examples.

$$\begin{array}{r|l}
 4d. \text{ is } \frac{1}{3} & \\
 \frac{1}{3}d. \text{ is } \frac{1}{8} & 83 \\
 \text{of } 4d. & 10\frac{3}{4} \text{ or } 4d. \frac{1}{2}
 \end{array}$$

$$\begin{array}{r}
 2 \mid 0) 93 - 4\frac{1}{2} \\
 \underline{4 - 13 - 4\frac{1}{2}} \text{ Answer.}
 \end{array}$$

In this Example I divide by 3 for the Groats, as being the 3d of one Shilling, and it quotes 83s. then I consider that a Halfpenny is the 8th of 4d. therefore I take the 8th part of the Groat Line, or 82s. and that produces 10s. and $\frac{3}{8}$ of a Shilling, or $4d. \frac{1}{2}$; then the two Lines being added together, make 93s. $4d. \frac{1}{2}$, or 4l. 13s. $4d. \frac{1}{2}$, as in the Work.

Parts of a Pound.

$$10s. \text{ is } \frac{1}{2} \mid 254 \text{ Yards of Cloth, at } 10s. \text{ per Yard.}$$

l. 127 Answer.

Here the Half of 254 is taken, because 10s. is the Half of a Pound.

$$\begin{array}{r|l}
 s. \ d. & 972 \text{ Gallons, at } 6s. 8d. \text{ per Gallon.} \\
 6-8 & \\
 \text{is } \frac{1}{3} & l. 324 \text{ Answer.}
 \end{array}$$

Here the third part is taken, because 6s. 8d. is the third of a pound; and the Answer is l. 324.

And thus may any Question proposed be answered, belonging to the second Table, or *Parts of a Pound*, that is, by dividing the given Number by the Denominator of the Fraction, and the Quotient will always be pounds; and if any thing remains, it is always so many halves, thirds, fourths, or fifths, &c. of a pound, according to the Denominator that you divide by.

If the price be Shillings and Pence, or Shillings, Pence, and Farthings, and no even part of a Pound; then multiply the given Number by the Shillings in the price, and take even parts for the Pence, or Pence and Farthings, and add the several Lines together, and they will be Shillings; which Shillings bring into Pounds as before.

Example

Examples.

$$\begin{array}{r} \text{lb. s. d.} \\ 426 \text{ at } 4 \text{---} 9 \\ \hline 4 \end{array}$$

$$\begin{array}{r} \text{Ells. s. d.} \\ 216 \text{ at } 2 \text{---} 3 \frac{1}{2} \\ \hline 2 \text{ per Ell.} \end{array}$$

$$\begin{array}{r} 6d. \frac{1}{2} \left| \begin{array}{r} 1704 \\ 213 \\ 106 \frac{1}{2} \text{ or } 6d. \end{array} \right. \end{array}$$

$$\begin{array}{r} 3d. \frac{1}{4} \left| \begin{array}{r} 432 \\ 54 \\ 9 \end{array} \right. \end{array}$$

$$2 \mid 0) 202 \mid 3 \text{--} 6$$

$$2 \mid 0) 49 \mid 5s.$$

$$l. 101 \text{--} 3 \text{--} 6$$

$$24 \text{--} 15 \text{ Answer.}$$

396 Gallons of Brandy at 7s. 6d.
per Gallon.

$$7$$

$$\begin{array}{r} 6d. \frac{1}{2} \text{ of } 1s. \left| \begin{array}{r} 2772 \\ 198 \\ 99 \end{array} \right. \end{array}$$

$$\begin{array}{r} 2 \mid 0) 306 \mid 9 \\ l. 153 \mid 9 \end{array}$$

When the Price is 10d. only, annex 0 to the Right of the given Number (which is multiplying by 10) and they are Pence; which I divide by 12 and 20.

Example; 426lb. of Hops, at 10d. per lb.

$$12) 4260$$

$$2 \mid 0) 35 \mid 5$$

$$l. 17 \text{--} 15 \text{ Answer.}$$

When the Price is 11d. set down the Quantity twice in the Form of Multiplication, and add the Lines together; then divide by 12 and 20.

Example; 426lb. of Copper, at 11d. per lb.

$$426$$

$$12) 4686 \text{ Pence.}$$

$$2 \mid 0) 39 \mid 0 \text{--} 6$$

$$l. 19 \text{--} 10 \text{--} 6$$

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If the Price be 11d. $\frac{1}{2}$ take Half the uppermost Line, &c.

Example ; 942lb. of Tobacco, at 11d. $\frac{1}{2}$ per lb.

942

471

12) 10833 Pence.

2 | 0) 90 | 2--9d.

l. 45--2--9d. Answer.

When the Price is 1s. only divide by 20.

Example.

2 | 0) 96 | 4lb. of Tobacco, at 12d. per lb.

l. 48---4 Answer.

When the Price is 2s. it is done at sight, by doubling the last Figure towards the Right-hand, and setting it apart for Shillings; and the Figures towards the Left are Pounds.

Example.

596 Gallons of Spirits, at 2s. per Gallon.

l. 59--12 Answer. Here the Double of 6 is 12, and the 59 are Pounds.

From this Method of working by 2s. a multitude of Examples may be most expeditiously wrought, *viz.*

	<i>Ells.</i>	<i>Yards.</i>
	444 Cambrick at 5s. 9d.	426 at 3s. 6d. per Yard.
	44--8 at 2s.	42--12 at 2s.
1s. $\frac{1}{2}$ of 2s.	44--8 at 2s. 1s. $\frac{1}{2}$ of 2s.	21--6 at 1s.
6d. $\frac{1}{2}$ of 1s.	22--4 at 1s. 6d. $\frac{1}{2}$ of 2s.	10--13 at 6d.
3d. $\frac{1}{2}$ of 6d.	11--2 at 6d.	
	5--11 at 3d. <i>Answer.</i>	74--11 at 3s. 6d.

Answer. 137-13 at 4-9d.

The Operation of these two Examples is so intelligibly wrought, that there is no need of verbal Explanation.

Again,

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Again, 548 Yards of Broad cloth, at 12s. 6d. per Yard.

l. 54 ---16 at 2s.
6 times 2 is 12s.

6d. is | 328---16 at 12s. Note, That 13l. 14s. is the
 $\frac{1}{4}$ of 2s. | 13---14 at 6d. fourth Part of 54l. 16s. the
two Shillings Line.

l. 342---10 Answer.

Or multiply by 12s. and take half of the given Number for the 6d. thus :

548 Yards.

12

6576

$\frac{1}{2}$) 274

2 | 0)685 | 0

l. 342- -10 Answer.

When the Price is an even Number of Shillings, multiply the Number of Integers by half the Price, and double the first Figure of the Product for Shillings, and carry as is usual in Multiplication, and the other Figures towards the Left will be Pounds.

Example.

296 Yards of Cloth, at 14s. per Yard.

7 the half of 14s.

l. 207---4s. Answer.

Here 7 times 6 is 42 ; the Double of 2s. is 4s. &c.

When the Price is an odd Number of Shillings, work for the even Number as above ; and for the odd Shillings take the $\frac{1}{2}$ of the given Number, and add them together.

Example.

426 Gallons of Citron Water, at 17s. per Gallon.

8 half of 16.

l. 396---16s.

24---16s.

l. 421---12s. Answer.

In

I this Example I say, 8 times 6 48; the double of 8 is 16s. and carry 4; then 8 times 9 is 72, and 4 is 76, 6 and carry 7; and 8 times 4 is 32, and 7 is 39; then the half of 4 is 2, &c.

I have not here Room to speak of the various and almost infinite Methods and Rules of *Practice* (having several other Subjects and Things to treat on) but shall leave some general Rules, which, if heedfully noted, will be of great Use Learners; and are these, *viz.*

1. When the Price is Parts of a Farthing, or of a Penny, and $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$, &c. then multiply the Integers by the Numerator, and divide by the Denominator, and the Result will be either Farthings or Pence; which reduce to Pounds, &c.

2. When the price is Pence, and no even part of a Shilling, as suppose 5d. 7d. 8d. or 9d. then it may be done by taking their parts, as 3d. and 2d. is 5d. and 4d. and 3d. is 7d. and 4d. and 4d. is 8d. and 6d. and 3d. is 9d. but it is an easy and sure Way to multiply the given Number by 7, 8, or 9, then the Product is Pence; which reduce to Pounds by *Reduction*.

3. When the price is Pence, and parts of a Penny; as 1d. $\frac{3}{4}$, 2d. $\frac{1}{2}$, or 6d. $\frac{3}{4}$, then work for the Penny by taking the $\frac{1}{7}$; for 2d. the $\frac{1}{8}$; and for 6d. the $\frac{1}{2}$: Then for the Farthings, take $\frac{1}{4}$ of the Penny Line, and for $\frac{1}{2}$, $\frac{1}{4}$ of the Two-penny Line; and for $\frac{3}{4}$, take $\frac{3}{8}$ of Six-penny Line; then add their Results together, and the Total will be Shillings, which reduce to Pounds by dividing by 20s. Or by the sure way of bringing the mixt Number into the lowest Denomination; as 1d. $\frac{1}{4}$, into 5 Farthings; 2d. $\frac{1}{2}$, into 5 Halfpence, and 6d. $\frac{3}{4}$ into 27 Farthings; then multiply the Integers by 5 and the Product is Farthings; or by 5 Halfpence, and the Product will be Halfpence; or by 27 Farthings, and the Product will be Farthings; which, whether Farthings or Pence, reduce to Pounds, &c.

4. When the Price is Shillings and Pence, or Shillings, Pence and Farthings; multiply the Integers by the Shillings of the price, and take parts for the Pence, or Pence and Farthings, &c.

5. If the price be Pounds and Shillings, or Pounds, Shillings, Pence and Farthings, multiply by the Shillings in the price, that is, in the Pounds and Shillings, and take parts for the Pence and Farthings.

6. When

6 When the Number of Integers hath a Fraction annex'd or belonging to them, as $\frac{1}{2}$ $\frac{1}{4}$ $\frac{3}{4}$, &c. then take $\frac{1}{2}$ or $\frac{3}{4}$ of the Price of one of the Integers, and add to that the other Results.

T A R E and T R E T, &c.

Gross Weight, is the Weight of the Goods in Hundreds, Quarters, and Pounds, with the Weight of the Hoghead, Cask, Chest, Bag, Bale, &c. that contains the Goods.

Tare, is allowed to the Buyer for the Weight of the Hoghead, Cask, Chest, Bag, Bale, &c.

Trett is an Allowance made for Waste, Dust, &c. in sundry Sorts of Goods, as Tobacco, Cotton, Pepper, Spices, &c. and is always $4lb.$ per $104lb.$ Suttle, and found by dividing the Suttle Pounds by 26, because 4 times 26 make 104. When the Gross Weight is brought into Pounds, and before the Tare is deducted, they are called *Pounds Gross*; and after the Tare is subtracted, the remaining Pounds are called *Pounds Suttle*, which divided by 26 (as said before) quotes Pounds Trett, &c.

Tare at so much per Cask, Hoghead, Bag, &c..

The Allowances for Tare are variously wrought, as by the following Examples :

In 12 Cask of Indigo containing 45 C. 1 qr. 14 lb. Gross, Tare, 30lb. per Cask, how many Pounds Nett ?

12 Casks	C. qr. lb.
30	45—1—14
or	4
360 Pound Tare	<hr/>
	181
	28
	<hr/>
	1452
	362
	<hr/>
	2 Gros.
	360 Tare.

Ans. 4712 Pounds Nett.

N

In

In this Example, the *lbs.* Tare of one Cask are multiplied by the Number of Casks, and the Product is 360 Pounds Tare? and the Gross Weight is reduced into Pounds by the Method shewn in Reduction of Weight; and then the Pounds Tare are deducted from the Pounds Gross, and the Remainder is Pounds Nett, viz. 4712 as in the Work.

When the Tare is at so much per C. wt. multiply the Number of Hundreds by the Tare, and take Parts for the odd Weight, and add it to the Tare found by multiplication; and divide it by 112 to bring it into Gross Weight, in order for Subtraction.

Example.

What is the Nett Wt. of 12 Casks of Argol, wt. Gross?

$$\begin{array}{r}
 84 \text{ C. } 2 \text{ qrs. } 14 \text{ lb.} \\
 14 \text{ Tare per C.} \\
 \hline
 336 \\
 84 \\
 7 \text{ for half C.} \\
 1
 \end{array}$$

$$\begin{array}{r}
 112 \overline{) 1184 \frac{2}{3}} \\
 112 \\
 \hline
 \end{array}$$

64 or half a C. & 8 lb. $\frac{2}{3}$

$$\begin{array}{r}
 \text{C. qrs. lb.} \\
 84-2-14 \\
 10-2-08 \frac{3}{4} \text{ Tare.} \\
 \hline
 74-0-05 \frac{1}{4} \text{ N. Wt.}
 \end{array}$$

The Tare in the last Example is to be found by the foregoing Directions, 10 C. 2 qrs. 1 lb. $\frac{3}{4}$, which subtracted as in the Work, leaves 74 C. 0 5 lb. $\frac{1}{4}$ for the Wt.



But

But the foregoing Example may be sooner done by *Practice* thus :

C. qrs. lb.

14*lb.* is $\frac{1}{8}$ of *C.* 8) 84—2—14 Gros.

sub. 10—2—8 $\frac{3}{4}$ Tare.

74—0—5 $\frac{1}{4}$ Nett.

In this Method the Gros Weight is divided by 8, because 14*lb.* is one Eighth of 112*lb.* and the Remainder is reduced into the next inferior Name, and still divided by 8, to the End and then deducted, as above, and the Nett weight is the same as by the other Way And so may any Tare *per Cent.* be found if the Tare be an even-Part of 112*lb.* as 14 is one Eighth, and 7*lb.* is the half of that, and 16*lb.* is one Seventh, and 8*lb.* is the half of that &c. that is, if the Tare be at 7*lb. per C.* find it for 14*lb.* as before, and then take the half of that for 7*lb. per C.* Tare, the like for 8*lb. per C.* Tare; take one Seventh for 16*lb.* and then the half of that for 8*lb.*

Of T R E T T.

What *Trett* is, when allowed, and how found, hath been said already ; now I shall give an Example for Explanation as follows,

Bought Six Hogsheads of Tobacco, containing Gros & Tare as follows, *viz.*



No.	C, qrs. lb.	lb.
1 qt.	4—1—20	Tare 80
2	5—2—19	100
3	6—3—18	102
4	7—3—11	104
5	8—2—13	106
6	9—1—14	110
<hr/>		
	42—3—12	602
	4	
	<hr/>	
	171	
	28	
	<hr/>	
	1380	
	342	
	<hr/>	
	4800	
	602	
	<hr/>	
	subtract	
	<hr/>	
	4198 Pounds Suttle,	
	deduct 161 $\frac{6}{3}$ Pounds Trett	
	<hr/>	
	4036 $\frac{7}{3}$ Pounds Nett.	

There are some few other Rules, such as Barter or exchanging Goods for Goods; also Exchange for Coin, Profit, Loss, &c. but all of them being done either by the Rule of Three, or by Rule of Practice, it is therefore here unnecessary to enlarge upon them.



OF FRACTIONS, Vulgar and Decimal.

WHAT *Fractions* are, hath already been hinted in the Rule of *Division*, from whence they arise; for the Remainder is a part of a Dividend remaining undivided; as admit 54*l.* is divided into 12 equal Parts, the Quotient is 4, and the Remainder 6: So that here six remains as yet undivided by 12, and is therefore 6 Parts in 12, or 6 Twelfths, equal to a half; for 6 is the $\frac{1}{2}$ of 12; and the Remainders are usually set down in this Form $\frac{1}{2}$ and when so, the Expression is called a Fraction; whose Parts are understood by the se Names, *viz.*

6 Numerator.

12 Denominator.

The *Numerator* is above the short Line, and sheweth the Number of Parts signified by the Fraction; and the *Denominator* stands under the Line, and declares the Number of Parts into which the Integer or whole Number is divided; as above 54*l.* is divided into 12 Parts, and the Quotient says there are 4 times 12 contained in 54, and 6 remains, which is 6 Twelfths of a Pound, or 10*s.* as abovesaid.

Fractions are thus set down and read, *viz.* $\frac{1}{4}$ one Fourth; $\frac{1}{2}$ one Half; $\frac{1}{3}$ one Third; $\frac{1}{5}$ one Fifth; $\frac{1}{6}$ one Sixth; $\frac{2}{3}$ two Thirds; $\frac{2}{4}$ two Fourth; $\frac{2}{6}$; $\frac{5}{7}$ five Sevenths, &c.

Fractions are either proper or improper. A proper Fractions hath its Numerator less than the Denominator, as $\frac{1}{4}$, five Eighths $\frac{5}{8}$, Twenty four Fifty-sixths, &c.

An improper Fraction hath its Numerator greater than the Denominator; $\frac{7}{3}$, Seven Thirds; $\frac{48}{17}$ Forty-eight Fifteenth's, &c.

Again Fractions are either Simple or Compound; Simple, when a part of an Integer or Thing hath but one Numerator, and one Denominator; as $\frac{3}{4}$ of a Pound Sterling, $\frac{1}{2}$ of a C. Weight, $\frac{1}{2}$ of a Tun, $\frac{1}{6}$ of a G Illo, &c. Compound, is a Fraction of a Fraction, as the $\frac{1}{2}$ of $\frac{1}{4}$ of a Pound Sterling, which is equal to half a Crown; or when one is divided into any Number of parts, and those parts again subdivided into part, &c.

Fractions are of two kinds, *viz.* *Vulgar* and *Decimal*. *Vulgar* Fractions are as declared before. *Decimal* Fractions are artificially expressed by setting down the Numerators only, the Denominators being understood; and are always an Unit, with as many Cyphers annexed as there are Places in the Numerator; and therefore may be either 10, or some Power of 10, as 100, 1000, or 10,000 or 100,000, &c.

Decimal Fractions, and their Use hereafter.

Reduction of Vulgar Fractions, is fit to prepare them for *Addition, Subtraction, &c.*

1 *To reduce a mixed Number to an improper Fraction.*

Rule.

Multiply the Integer by the Denominator, and take in the Numerator.

Example.

Reduce 12 Gallons $\frac{3}{4}$ to an improper Fraction, thus :

4

51 New Numerator.

Ans. $\frac{51}{4}$ or 51 Quarts.

2. *To reduce an improper Fraction to a whole or mixt Number.*

Rule.

Divide the Numerator by the Denominator.

Example.

Reduce the last Example to a whole or mixt Number, *viz.*

51

4) 51

4

12

3 Remainder, equal to $\frac{3}{4}$.

Here 12 Gallons is the whole Number, $\frac{3}{4}$ the Fraction, the same with three Quarts.

3 To

3. To reduce Fractions to a common Denomination.

Rule.

Multiply the Numerator of each Fraction into all the Denominators except its own and the Product will be a Numerator to that Fraction; and then do so by the next, &c.

Example.

Reduce $\frac{1}{2}$, $\frac{2}{3}$, and $\frac{3}{4}$ of any Integer, to a common Denominator; say twice 4 is 8; and 6 times 8 is 48, for a new Numerator to $\frac{1}{2}$, then say 3 times 3 is 9, and 6 times 9 is 54, for a new Numerator to $\frac{2}{3}$; lastly, say, 5 times 4 is 20, and 3 times 20 is 60, the Numerator to $\frac{3}{4}$: Then to find the common Denominator; so that $\frac{4}{7}$ is equal to $\frac{2}{7}$ $\frac{4}{7}$ to $\frac{2}{7}$, and $\frac{6}{7}$ to $\frac{6}{7}$. Which may be thus proved:

$\frac{1}{2}$ of a Pound is	13 4 48	}	72) 162 ($2\frac{2}{3}$ or $2\frac{2}{3}$
ditto	15 0 54		144
$\frac{3}{4}$ ditto	16 8 60		-----
			18

21. 5s. or 45 0 $\frac{162}{72}$ Common Denominator.

Here the several Numerators are added together, and they make 162: which placed over the common Denominator, 72, make the improper Fraction $\frac{162}{72}$; and its value is found as before directed in the Rule for reducing for an improper Fraction to a whole or mixt Number; as may be seen in the foregoing Page.

4 To reduce a Fraction into its lowest terms.

Rule.

If they are even Numbers, take half of the Numerator, and Denominator, as long as you can; and then divide them by digit Number (i. e. 3, 4, 5, 6 &c.) that will leave no Remainder in either.

Example.

Reduce $\frac{56}{84}$ into its lowest Terms; say, the $\frac{1}{2}$ of 56 is 28, and the $\frac{1}{2}$ of 84 is 42; and then the $\frac{1}{2}$ of 28 is 14, and the $\frac{1}{2}$ of 42 is 21.

of 42 is 21 : So the Fraction $\frac{56}{42}$ is reduced $\frac{4}{3}$. And since they cannot be halved any longer, for though you can halve 14 yet you cannot 21 without remainder ; try therefore to divide them by some other digit Number ; and you will find, that 7 will divide both Numerator and Denominator without any Remainder ; then say, the 7's in 14 twice, and the 7's in 21, 3 times : So the Fraction $\frac{56}{42}$ reduced into its lowest Terms, will be $\frac{4}{3}$; which is of the same Value as $\frac{56}{42}$. The Work is done in this form ;

$$\begin{array}{r|l|l|l|l} 2 & 2 & 7 & & \\ 56 & | & 28 & | & 14 & | & 2 \\ \hline 84 & | & 42 & | & 21 & | & 3 \end{array}$$

And the Proof that $\frac{4}{3}$ is of the same Value with $\frac{56}{42}$ will appear by multiplyin any Integer by the Numerator of each Fraction, and dividing by the Denominator of each Fraction.

Example.

Let the Interger be 1*l*. Sterling, or 20*s*.
The Fraction $\frac{2}{3}$ The Fraction $\frac{56}{42}$

$$\begin{array}{r} 5 \\ 20 \\ 2 \\ \hline 3) 40 \\ \hline 13--4d \end{array}$$

$$\begin{array}{r} s. \\ 20 \\ 56 \\ \hline 84) 1120) 13s \\ 84 \\ \hline 280 \\ 252 \\ \hline 28 \\ 12 \\ \hline 336 4d. \\ 336 \\ \hline (0) \end{array} \left. \vphantom{\begin{array}{r} s. \\ 20 \\ 56 \\ \hline 84) 1120) 13s \\ 84 \\ \hline 280 \\ 252 \\ \hline 28 \\ 12 \\ \hline 336 4d. \\ 336 \\ \hline (0) \end{array}} \right\} 13s 4d.$$

Here it is manifest, that by working by a Fraction in its lowest Terms, much Time and Figures are saved. In one Ope-

Operation, 20 the Interger is multiplied by 2, and the Product 40 divided by 3, and there remains 1, or $\frac{1}{3}$ of a Shilling or a Groat, as in the other Work.

There are other Methods of reducing a Fraction into its lowest Terms; but none so ready as the foregoing, where it can be used.

5. *To reduce a Compomnd Fraction into a simple one of the same Value.*

Rule. Multiply the Numerators together for a New Numerator and the Denominators together for a new Denominator.

Example.

Reduce $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{1}{2}$ of a Pound Sterling into a simple Fraction, Say twice 3 is 6, and 5 times 6 is 30, the Numerator; then 3 times 4 is 12, and 6 times 12 is 72, the Denominator: So $\frac{2}{3}$ of a Pound is equivalent to $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{1}{2}$ of a *l.* Thus proved, $\frac{1}{2}$ of a Pound is 16s 8d. and $\frac{3}{4}$ of 16s. 8d. is 12s. 6d. and $\frac{2}{3}$ of 12s. 6d. is 8s 4d. the Answer. And multiply 20s. by 30, and dividing by 72, gives the same Answer, as in the following Work is plain.

20	}
30	
<hr style="width: 50px; border: 0.5px solid black;"/>	
72)600(8s	
576	
<hr style="width: 50px; border: 0.5px solid black;"/>	
24 Remains	}
12 Multiply	
<hr style="width: 50px; border: 0.5px solid black;"/>	
72)288(4d.	
288	
<hr style="width: 50px; border: 0.5px solid black;"/>	
(0)	

To find the Value of any Fraction, whether of Coin, Weight, or Measure.

Rule Multiply the Integer by the Numerator and divide by the Denominator; and if any thing remains, multiply it by the Number of Units of the next inferior Denomination.

Ex.

Example.

What is $\frac{3}{5}$ of a Pound, or 20s. ? The Operation of the foregoing Example of Proof to the Compound Fraction $\frac{3}{5}$ of $\frac{3}{4}$ of $\frac{1}{2}$ answers this Question, and need not to be repeated. Again, what is $\frac{1}{2}$ of a Ton Weight !

C.

20 then Integer
5 the Numerator.

The Denominator 6) 100

C. 16—4 remains

4 qrs. 1 C.

6) 16

qrs. 2—4 remains.
28 lb. 1 qrs

Answer,
16 C. 2 qrs. 18 lb. $\frac{3}{4}$

6) 112
lb. 18 $\frac{1}{2}$

Here the Integer 20 C. is multiplied by the Numerator 5 and the Product 100 is divided by the Denominator 6 and the Remainder 4 is multiplied by the parts of the next inferior Denomination, &c. and the Answer is 16 C. 3 qrs. 18 lb. $\frac{3}{4}$, or $\frac{1}{2}$, of a Pound Weight, as in the Work.

Addition of Vulgar Fractions.

IF the Fractions to be added have a common Denominator, add the Numerators together for a Numerator, and place it over the common Denominator.

Example.

Add $\frac{2}{3}$ $\frac{2}{3}$ and $\frac{4}{5}$ of a Pound Sterling together. Say, 2 & 3 is 5, and 4 is 9, the Numerator ; which place over 5, the common Denominator, thus $\frac{9}{5}$: and this improper Fraction $\frac{9}{5}$ is in Value 36s. for 4s. (the 5th of a Pound) is for if the Numerator 9 be divided by the Denominator 5 I say the 5's in

in 9 once, and 4 remains, which is $\frac{4}{9}$ of a Pound, or *1l. 16s.*

But if the Fraction to be added have an equal Denominator, then they must be reduced to a common Denominator, by the Rule before shewn, before Addition can be made; and then proceed as above.

2. When mixed Number are to be added, work with the fractional Part to the whole Numbers.

Example.

Add $25\text{ l. } \frac{3}{4}$ to $12\frac{1}{4}$, thus $25\frac{3}{4}$
 $12\frac{1}{4}$

1. 38 Answer.

Here 1 and 3, the Numerators, make 4; and $\frac{4}{4}$ is 1; & 2 is 3, and 5 makes 8; and 1 and 2 is 3, and the Answer is 38.

Or they may be reduced to improper Fractions thus:

$25\frac{3}{4}$	$12\frac{1}{4}$	103
<u>4</u>	<u>4</u>	<u>49</u>
103	49	$4) 152$
<u>4</u>	<u>4</u>	<u>38</u>

Here the Numerators are added, and their Total 152; which divided by 4, the common Denominator, quotes 38. the same Answer as above.

3. When compound Fractions are to be added to simple ones, reduce the compound Fraction to a simple one, as before directed; and then proceed as above.

Example.

Add $\frac{1}{2}$ and $\frac{3}{4}$ to $\frac{2}{3}$ of $\frac{2}{3}$ is equal to the compound Fraction. Then add, saying, 2 and 3 is 5, and 2 is 7, the new Numerator, and $\frac{7}{6}$ equal in Value to *17s. 6d.* will be the Answer.

Subtraction of Vulgar Fractions.

IN this Rule the Fractions must have a common Denominator, or be reduced to one, before Deduction can be made.

Example.

What is the Difference between $\frac{1}{4}$ and $\frac{3}{8}$? Answer $\frac{2}{8}$; which may be proved by Addition, for $\frac{1}{4}$ and $\frac{2}{8}$ make $\frac{3}{8}$.

Note, The Difference between the Numerators is the Difference of the Fractions.

Again from $\frac{3}{4}$ of a Pound take $\frac{1}{12}$: Here the Fractions are to be reduced to a common Denominator; 36 is the first Numerator, and 20 the second Numerator, their Difference is 16; and 48 is the common Denominator: So that $\frac{16}{48}$ or $\frac{1}{3}$, in its lowest Terms, is the Difference between $\frac{3}{4}$ of a Pound, and $\frac{1}{12}$ of a Pound.

To subtract a Compound Fraction from a Single one.

Rule.

Reduce the compound Fraction to a simple one, and then work as before.

Example.

From $\frac{1}{2}$ take $\frac{2}{3}$ of $\frac{8}{9}$ say twice 8 is 16, and 3 times 9 is 27 therefore $\frac{16}{27}$, is equal to the compound Fraction. Then $\frac{1}{2}$ and $\frac{16}{27}$ must be reduced to a common Denominator thus: —13 times 27 is 351, the first Numerator; and 14 times 27 is 378 the common Denominator. Then subtract 224 the second Numerator, from 351 the first Numerator, and the Remainder is 127, which place over 378 the common Denominator, thus $\frac{127}{378}$ Answer.

When a simple Fraction is to be deducted from a whole Number.

Rule.

Subtract the Numerator of the Fraction from the Denominator, and place the Remainder over the Denominator, and carry 1 to subtract from the whole Number, &c.

Example.

From 12 take $\frac{1}{8}$ thus: Say 5 (the Numerator from 8 the Denominator 8, thus $\frac{3}{8}$; then 1 from 12 and there remain 11. So the Answer is 11 $\frac{3}{8}$.

Mul.

Multiplication of Vulgar Fractions.

Rule. Multiply the Numerators into one another for the Numerator of the Product; and then do the same by the Denominators, for the Denominator of the Product.

Examples.

Multiply $\frac{3}{4}$ of a pound by $\frac{5}{6}$ of ditto; Say 3 times 5 is 15, the Numerator; and 4 times 6 is 24, the Denominator: So the Answer $\frac{15}{24}$, or in the lowest Term $\frac{5}{8}$.

You are to note, That, Multiplication in Fractions lessens the Product, though in whole Numbers it augments it; as above $\frac{3}{4}$, or 12s. 6d. is less than $\frac{1}{2}$, or 16s. 8d. and also less than the other Fraction $\frac{3}{4}$, or 15s. The reason of which I have not here Room to insist on; but it is given in my *Arithmetic, in Multiplication of Vulgar Fractions*; to which Book I refer the reader for that, and sundry Enlargements in the several Rules of the Science of Arithmetic.

2. To multiply a whole Number by a Fraction.

Rule. Multiply the Integers by the Numerator of the Fraction, and place the Product over the Denominator.

Example.

Multiply 56l. by $\frac{3}{4}$

$$\begin{array}{r} 56 \\ 3 \\ \hline 168 \\ 4 \end{array} \left. \vphantom{\begin{array}{r} 56 \\ 3 \\ \hline 168 \\ 4 \end{array}} \right\} \text{Facit.}$$

This improper Fraction $\frac{168}{4}$ reduced according to Rule makes but 42l. which is less than 56; and confirms what was before asserted, viz. That Multiplication of Fractions lessens the Product, &c.

To multiply a Simple by a Compound Fraction.

Rule. Reduce the Compound Fraction to a Simple one, as before taught, and work as above.

Example.

Multiply $\frac{6}{8}$ of a pound, by $\frac{2}{3}$ of $\frac{3}{4}$ of a pound; say 6 times 6 is 36, and 8 times 12 is 96. So that the Answer is $\frac{36}{96}$, or $\frac{3}{8}$ in its lowest Terms; equal to 7s. 6d.

O

Division

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Division of Vulgar Fractions.

Rule. Multiply the Numerator of the Divisor into the Denominator of the Dividend, and the Product is the Denominator of the Quotient; and then multiply the Denominator of the Divisor into the Numerator of the Dividend, and the Product will be the Numerator of the Quotient.

Example.

Divide $\frac{7}{8}$ by $\frac{2}{3}$ ($\frac{4}{3}$ Quotient.

Here 16 multiplied by 2 gives 32; and 15 by 3, gives 45: So that the Quotient is $\frac{4}{3}$ equal to $\frac{1}{3}$, as in the work.

Again, suppose $\frac{3}{4}$ was divided by $\frac{3}{4}$, the Quotient will be $\frac{7}{7}$, equal to 1 Integer, or whole Thing. And so for any other Example.

Reduction of Decimal Fractions.

W H A T a *Decimal Fraction* is, hath been already shewn. The next Step is how to reduce a vulgar Fraction into a Decimal: Which is no more than to annex Cyphers at Discretion (that is 2, 3, or 4, &c.) to the Numerator, and then divide it by the Denominator.

Example 1.

Reduce $\frac{3}{4}$ of a Pound Sterling to a Decimal:

4) 300 }

that is, 75 Hundredths, equal to $\frac{3}{4}$'s of any thing, whether Money, Weight, Measures, &c. as being $\frac{3}{4}$ of 100; and so 25 Hundredths is, in Decimals, the Quarter of any Thing, as being the $\frac{1}{4}$ of 100; and 5 Tenths expresses the half of any thing, as being the half of 10.

In Reduction of Decimals sometimes it happens that a Cypher, or Cyphers, must be placed on the Left-hand of the Decimals, to supply the Defect or Want of Places in the Quotient of the Division. In this Case always remember, that so many Cyphers as you annex to the Denominator of the vulgar Fraction, so many Places you must point off in the Quotient towards the Left-hand; but if there be not so many Places to point off, then you must supply the Defect by placing a Cypher or Cyphers to the Left of the Decimal.

Example 2.

Reduce *9d.* or $\frac{9}{12}$ to the Decimal of a Pound Sterling thus:

240) ,9000,0 (,0375
72..

180

168

120

120

(0)

Here are but three Places in the Quotient, viz. 375; and therefore I cannot point off 4 for the 4 Cyphers annexed to 9; wherefore I prefix 0 to the Left of the Quotient 375, thus, ,0375, and then it is 375 ten Thousand Parts of an Integer.

The more Cyphers you annex, the nearer you bring your Decimal to the Truth: But in most Cases, four Cyphers annexed are sufficient. But when you are to reduce $\frac{1}{2}$, $\frac{1}{4}$, or $\frac{3}{4}$ (as above) of an Integer to a Decimal, or any Number of Shillings to a Decimal of a Pound, two Cyphers are sufficient. One Example more.

Example 3.

Reduce 3 Farthings to the Decimal of a Pound, that is in Vulgar Fractions $\frac{3}{16}$, 960 Farthings in a Pound.

96 | 0) 3,0000 | 0 (,003125. The Work being performed according to the Division, with two Cyphers prefixed, quotes ,003125, or 3125 Ten Hundredth Thousandth parts of a *l*. By the same Method, the vulgar Fractions of Weight, Measure, &c. are reduced to Decimal.

Example 4.

How is 12 Pounds Weight expressed in the Decimal of 1 C. Weight *Avoirdupois*, or 112 *lb*. the Vulgar Fraction is $\frac{12}{112}$, and the Decimal, 1071 found as before, thus:

112) 12,000 (,1071

112

80, &c.

The Remainder, 48, is not worth Notice, being less than the 100000 part of a Unit or 1.

Example 5.

How is 73 Days brought to the Decimal of a Year? vulgarly thus expressed $\frac{73}{365}$.

365) 730 (,2 *Ans*. 2 Tenths.

Thus proved 36 5

(0)

73

Here 365, the Days in a Year, is divided by 10, twice; and the Quotients added together, and they make 73 Days.

0 2

1 a

Valuation of Decimals.

TO find the Value of a Decimal Fraction, whether of Corn-Weight, Measure, &c.

Rule. Multiply the Decimal given, by the Units contained in the next inferior Denomination, and point off as many places from the Right-hand as you have in your Decimal, so those Figures towards the Left of the point are Integers, or whole Numbers; and those on the other Side, towards the Right-hand, are parts of 1, or Unity; that is, so many Tenths, Hundredths, Thousandths, or Ten Thousandths of one of those Integers, whether a Pound, a Shilling, or a Penny, &c. or of a Ton, a Hundred, a Quarter, or a Pound Weight, &c. And so of any other Integer, of what Quality or Kind soever.

Examples.

,476 Parts of a Pound Sterling,
20 Shillings a Pound.

9,520

12 Pence one Shilling.

Answer,
9s 6d. 960
Parts, or $\frac{1}{4}$
of 1d.

6,240

4 Farthings 1 Penny.

,960 Parts, or almost $\frac{1}{2}$ of a 1d.

,476 Parts of a Ton Wt.
20 C. 1 Ton.

,9520

4 qrs. 1 C.

2,080

Ans. 28 lb. 1 qr. of a C.

9 C 2 qrs. 2 lb. 240 Parts.

2,240

In the Example of Money, I multiply the Fraction by 20, and point off 520 for the 3 places in the Decimal, &c. and the Answer is 9s. 6d. $\frac{1}{4}$ nearly.

In the Example of Weight, I proceed as in that of Money, (the Fraction being the same) but with different respect

spect to the inferior Denominations ; and the Answer is 9 C. 2 qrs. 2 lb. $\frac{24}{1000}$ of a lb. Weight.

To find the Value of a Decimal in Money in a briefer Method, *viz.*

Rule. Always account the Double of the first Figure (to the Left-hand) for Shillings ; and if the next to it 5, reckon 1s. more ; and whatever is above 5 call every One, Ten ; and the next Figure so many Ones as it contains ; which Tens and Ones call Farthings ; and for every 24, abate one : As admit the last Example of Money, *viz.* 276 ; the Double of 4 is 8, and there being one 5 in 7, (the next Figure) I reckon 1s. more, which makes 9s. and there being 2 (in the 7) above 5, they are to be accounted two Tens, or 20 ; which with the next Figure 6 being so many Ones, making 26 Farthings ; and abating 1 for 24, they give 6d. and a Farthing more.

Addition of Decimals.

IS the same in Practice as in whole Numbers ; only in setting down, Care must be taken that the Decimal parts stand respectively under like parts ; that is, Primes under Primes, Seconds under Seconds, Thirds under Thirds, &c. and the Integers stand as in whole Numbers.

Example.

Integers.	Primes.	Seconds.	Thirds.	Parts.	Primes.	Seconds.	Thirds.	Fourth.	Fifths.
246	426			4796	47962				
75	42			42	0642				
9	06			076	006				
65	794			0004	7				
42	005			5	9				
<hr/>									
437	705	1	4760	2	14982				

Note, There must be as many places pointed off, as there are in that Number, which has most Decimal places.

The casting up of the foregoing Examples is the same with Addition of one Denomination, in whole Numbers : The Total of the first (supposing them Pounds Sterling) is 437*l.* and 705 parts. The second is 1*l.* and 4760 parts. And the third is 2*l.* and 14982 parts.

Subtraction of Decimals.

THE Numbers must be placed as before in *Addition*, and then proceed as in *Subtraction of Numbers of one Denomination*.

<i>l. pts.</i>	<i>l. pts.</i>	<i>l. pts.</i>
46,51	140,42	4962,0
9,24	91,7462	0,472
<hr/> 37,27	<hr/> 48,6738	<hr/> 4962,528

Multiplication of Decimals.

HERE the placing the Numbers, and the Operation is the very same as the whole Numbers; remember only to point off, towards the Right-hand, so many places for Decimals, as you have Decimal places in both *Multiplieand* and *Multiplier*.

Examples.

(1)	(2)	(3)
24,6	4602	,2796
2,5	,075	26
<hr/> 1230	<hr/> 23010	<hr/> 16776
492	32214	5592
<hr/> 61,50	<hr/> 345,150	<hr/> 7,2696
(4)	(5)	(6)
,07214	,383	4,25
,006	,16	1,09
<hr/> 1,00043284	<hr/> 2298	<hr/> 3825
	383	4250
	<hr/> 6128	<hr/> 46325

Note. That where there are not a competent Number of Figures, or Places to point off, such Defect is supplied with Cyphers to the Left-hand; as in the 4th and 5th Examples, according to what was before hinted in reducing a *Vulgar Fraction* to a *Decimal*.

Division.

Division of Decimals.

IS the same in Operation as whole Numbers: The only Difficulty is to know how many Decimal Places to point off, towards the Left-hand of the Quotient: To which end, remember this Rule; observe how many Decimal places there are, both in the Divisor and in the Dividend, and find the Difference; and whatsoever it is, so many places must be pointed off to the Right-hand of the Quotient.

Examples.

Divide 12,345670 by 6,789 12 345670 (1,818
6789

In this Example, the Dividend hath three Decimal Places more than the Divisor, wherefore I point off 3 places to the Right-hand of the Quotient, viz. 818; so the Quotient is 1 Integer, and ,818 parts.

$$\begin{array}{r} 55566 \\ 51312 \\ \hline 11447 \\ 6789 \\ \hline 56580 \\ 54312 \\ \hline (2268) \end{array}$$

Divide 3 460000 by 12,3 3,460000 (2,813
246 ...

Here the Difference between the Decimal Places in the Divisor and Dividend is 3 places; as in the foregoing Example; therefore ,813 is pointed off for the Decimal Fraction; the Quotient is 3 Integers, and ,813 Thousandths of an Integer.

$$\begin{array}{r} 1000 \\ 984 \\ \hline 160 \\ 123 \\ \hline 370 \\ 369 \\ \hline (1) \end{array}$$

Thus much for Fractions Vulgar and Decimal; wherein I have been as concise as possible, and worked with as much plainness as I could invent.

BOOK - KEEPING.

THE next Qualification to fit a Man for Business, after *Arithmetic*, is the Art of *Book-keeping*, or *Merchants Accompts*, after the *Italian Manner*, by Way of Double Entry.

It is not without good Reason, that most People of Business and Ingenuity are desirous to be Masters of this Art; for if we consider the Satisfaction that naturally ariseth from an Accompt well kept; the Pleasure that accrues to a Person by seeing what he gains, by such Species of Goods as he deals in, and his whole Profit by a Year's Trade: and thereby also the true State of his Affairs and Circumstances; so that he may, according to Discretion, retrench, or enlarge his Expences, &c. as he shall think fit.

The Art of *Book-keeping*, or *Merchants Accompts*, is talked of by many, but truly understood but by very few: for every Petty School-master in any By-corner, will be sure to have MERCHANTS ACCOMPTS expressed on his Sign, as a principal Article of his Ability in Teaching: Though strictly speaking, for want of the practical part, he knows hardly any thing of the Matter, and is consequently incapable of teaching it.

Instructions, Notes, Rules, and Directions, for the right ordering and keeping *Merchants Accompts*, by the excellent Order of Charge and Discharge, commonly called *Debtor and Creditor*.

Of the Books in Use.

THE Books of principal Use, are the *Waste-Book*, (by some called the *Memorial*) *Journal* and *Ledger*.

Waste-Book.

IN this Book must be daily written whatever occurs in the Way of Trade; Buying, Selling, Receiving, Delivering, Bargaining, Shipping, &c. without Omission of any one Thing either bought or sold, borrowed, &c.

The WASTE-BOOK is ruled with one marginal Line, and three Lines for Pounds, Shillings, and Pence, and the

the Day of the Month, and Year of our Lord, is inserted in the Middle of the Page. In this Book any one may write, and on Occasion, any thing may be blotted out, if not well entered, or any Error be made.

JOURNAL.

INTO this Book every Article is brought out of the *Waste-Book*, but in other Terms, in a better Stile, and in a fairer Hand, without any Alteration of Cyphers or Figures; and every Parcel, one after another, are promiscuously set without Intermiſſion, to make the Book, or ſeveral Entries of it, of more Credit and Validity, in Caſe of any Law-diſpute, or any other Controverſy that may happen between Merchant and Merchant. In this Book you are to diſtinguiſh the Debtor and Creditor (or in other Terms, the *Debit & Credit*.) And to this Book you muſt have Recourſe for Particulars of Account, which in the Ledger are entered in one Line. In this Book alſo, the Day of the Month is uſually placed in the Middle of the Page; it is ruled with double marginal Lines for References to the Ledger; and with three Lines for *l. s. d.* as the *Waste-Book*.

Of the Ledger.

FROM the *Journal* or *Day-Book*, all Matters or Things are poſted into the Ledger, which by the *Spaniards* is called *El Libro Grande*, as being the biggeſt Book, or chief of Accounts. The Left-hand Side of this Book is called the *Debtor*, and the Right the *Creditor* Side; and the *Numbers*, or *Folios* of each Side, muſt be alike, as 45 *Debtor*, and alſo 45 *Creditor*. The Day of the Month (in this Book) is ſet in a narrow Column on the Left-hand, and the Month on the Left of that; But where I kept Books, the Number in the narrow Column referred to the *Journal* Page, and the Month and Day was placed in the Broad Column, to the Right of that; at the Head of each Folio is the Name, the Place of Reſidence, and the Year of our Lord; as thus:

London, Anno ————— 1779.

But the Example of theſe ſeveral Books hereafter following, will make the foregoing Hints of them much more intelligible. The following is a general Rule, upon which moſt of the Entries in Book-keeping depend, *viz.*

All

All Things received, or the Receiver, are Debtors to the Deliverer, or the Deliverer.

Waste-Book Entry.

l. s.

2	Bought of William Wilkins, of Norton Falgate, 120 Yards of white Sarcenet, at 2s. 3d. per Yard, to pay in two Months	13 10 —
---	--	---------

The Journal Entry of the same.

1	Wrought Silk, Debtor to William Wilkins, l. 13--10 for 120 Yards of white Sarcenet, at 2s. 3d. per Yard, to pay in two Months	
---	---	--

In this Example, the Wrought Silks are Received and therefore Debtor to William Wilkins the Deliverer.

13 10 —

Again,

Waste-Entry Book.

January 4.

2	Sold Henry Hartington 246lb. nett of Indico, at 6s. 6d. per lb. to pay in 3 Months	79 19 —
---	--	---------

Journ l Entry.

3	Henry Hartington Dr. to Indico, for 246 lb. n-tt, at 6s. 6d. per lb. to pay in 3 Months	79 19 —
---	---	---------

Once more.

Waste-Book Entry.

4	Bought of George Goodinch, Sen. viz. Chesh. Cheese 430 C. $\frac{1}{2}$, at } 23s. 4d. per C. } l. 502--5	
	Butter, 50 Firkins, qt. nett } 2800lb. at 3d. per lb. } 35--0	
4	to pay at 6 Months	53 05 —

Journal Entry.

5	Sundry Accounts, Dr. to Geo. Goodinch.	
---	--	--

l. 537 --05--

5	Cheshire Cheese, for 430 C. } $\frac{1}{2}$, at 23s. 4d. per C. } l. 502--0	
	Butter, for 50 Firkins, qt. } 2800lb. at 3d. per lb. } 35--0	
	to pay in 6 Months	53 05 —

Waste-Book.

Sold to *James Jenkins*, viz.

White Sarcenet 50 Yards	}	7--10--0
at 3s. per Yard		
Indico 50lb. at 7s. per	}	17--10--0
Pound		

l.	s.	d.
25	—	—

Journal Entry of the last.

6 *James Jenkins* Debtor to sundry Accounts, viz.

7 To white Sarcenet for 50 Yards, at 3s. per Yard ———— £. 7--10--0

8 To Indico for 50lb. at 7s. per lb. ———— 17--10--0

25	—	—
----	---	---

From these few Examples of Entry, it may be observed, that an experienced Person in Accompts, and a good Writer, may keep a *Journal* without a *Waste-Book*, or a *Waste-Book* without a *Journal*, since they both import one and the same Thing, though they differ a little in Words, or expressing.

But however, I shall give Methods of keeping each as far as Room will give me Leave.

(I)

The Waste-Book.

London, January 1st ———— 1779.

An Inventory of all the Money, Goods, and Debts, belonging to me, A. B. London, Merchant, viz.

In Cash, ————	3500, ---, ---
In Tobacco 4726lb. at 9d. per lb. ————	177, 4, 6
In broad Cloth 6 Pcs. at 50s. per Piece, ————	15, ---, ---
Dowlas 1000 Ells, at 2s. 4d. per Ell, ————	116, 13, 4
Canary Wines 9 Pipes, at 30l. per Pipe ————	270, ---, ---
Due to me from <i>Henry Bland</i> , per Bond ---	60, ---, ---

4138	17	10
------	----	----

Journal,

		(1)		l.	s.	d.
		Journal.				
		Inventory, &c.				
1	Sundry Accts. Dr. to	}	4138, 17, 10			
	Stock					
		viz.				
1	Cash	}	3500, ---, ---			
	Tobacco for 4726					
	lb. at 9d. per lb.	}	177, 4, 6			
1	Broadcloths for 6					
	Pieces at 50s. p.	}	15, ---, ---			
	Piece					
	Dowlas for 1000	}	116, 13, 4			
	Ells, at 3s. p. E.					
1	Canary Wines for	}	270, ---, ---			
	Pipes, at 30l. p.					
3	Pipe	}	60, ---, ---			
	Henry Bland due					
	on Bond,	}				
				4138	17	10

I shall make one page serve for Waste-Book and Journal Entries, to save room, and also to have both methods of Entry under eye, to make them more intelligibly useful to the reader, he hereby being not obliged to turn over leaf to see the difference of Entry.

Waste-Book.											
London, January 11st. —————						1779.					
Owing to William Webb, by											
Note of Hand — — —						50	—	—	l.	s.	d.
Ditto to Roger Ruff, the Ba-						16	12	4			
lance of his Account —											
Ditto to Henry Hern, due the						62	—	—			
the 4th of May next —											
									128	12	4
Journal.											
1	Stock Debtor to Sundry Accounts,										
	l. 128—12—4 ——— viz.										
3	To William Webb, by Note										
	of my Hand — — —						50	—	—		
4	To Roger Ruff, for the Ba-						16	12	6		
	lance of his Account —										
5	To Henry Hern, due the 4th						62	—	—		
	of May next — — —									128	12 4

Waste.

Waste-

Waste-Book.

London, Feb. 2d _____, 1779.

		l.	s.	d.
Sold <i>Thomas Townshend</i> , viz.				
246lb. of <i>Virginia Cut Tobacco</i> , at 14d. per lb,	} 14 07 —			
460 Ells of <i>Dowlas</i> , at 3s. per Ell.	} 69 — —			
	— 83	07		—

Feb. 2.

Journal.

6 *Thomas Townshend*, Debtor to Sundries,

viz.

6 To Tobacco, for 246lb. at 14d. per lb.	} 14 07 —			
To Dowlas, for 460 Ells at 3s. per Ell		69 — —		
		— 83	07	—

Waste Book.

Ditto 24th.

Bought of <i>Leonard Legg</i> , four Pipes of Canary, at 28l. per Pipe.	112	—	—
To pay in 6 Months—			

Ditto 24th.

Journal.

1 Canary Wines Debtor to <i>Leonard Legg</i> , for 4 Pipes, at 28 Pounds per Pipe	112	—	—
2 To pay in 6 Months.			

The short Lines ruled against the Journal Entries, are or may be, termed Posting Lines, and the Figure on the Top of the Lines denotes the Folio of the Ledger where the Debtor is entered; and the Figure under the Line shews the Folio of the Ledger where the Credit is entered; and the other smaller Figures against the sundry Debtors, or sundry Creditors (whether Goods or Persons) shew also in what Folios of the Ledger they are posted.

The Accounts of Persons and Things are kept in the Ledger on opposite Pages, in which those, which in the Journal are said to be Debtors are entered on the Left-hand Page, with the Word *To*; and those, to which they are said

be Creditors, are enter'd on the Right-hand Page, with the word By.

For instance, the last Journal Entry should be posted on the Left-hand, or Debtor's Side, of the Account of *Canary Wines*, thus:

1779.

Feb. 24. To Leonard Legg————4 Pipes————112 0 0

And the same should be posted on the Right-hand, or Creditor Side, of the Account of *Leonard Legg*, thus:

1779.

Feb. 24. By Canary Wines to pay in 6 Month --- 112 0 0

There are several other Books used by Merchants besides those three before mentioned; as the *Cash Book*, which is ruled as the Ledger, and folio'd likewise, wherein all Receipts of Money are entered on the Left-hand Folio, and Payments on the Right; specifying in every Entry the Day of the Month (the Year being set on the Top) for what, and for whose Account the Money was received, or paid; and the total Debit or Credit on each side is to be posted into the Ledger to the Account of Cash therein, in one Line of either Side, viz. to, or by sundry Accounts, as *per Cash-book, Folio, &c.* which is to be done once a Month or at Discretion, and the Particulars of each Side, Article by Article, are to be posted into the Ledger to the proper Accounts unto which they belong; with References in the Cash-book, by which you may know at any Time what Cash you have or ought to have by you.

Another Book is a Book of Charges of Merchandize, wherein is to be entered the Custom and petty Charges of any Goods shipped; as Portorage, Wharfage, Warehouse-room, &c. which once a Month is transferred into the Cash-book on the Credit Side, making Reference to the Book of Charges of Merchandize; and likewise the same in the Debtor Side of the same Account in the Ledger for the Amount thereof.

The next Book I shall name, is the invoice-book, or Book of Factories: In this Book is to be copied all Invoices of Goods shipped, either for Accompts proper or partable; and also of Goods received from Abroad, which must always be entered on the Left-side, leaving the Right-side blank; and on the Advice of the Disposal of Goods sent abroad, and also on the Sale of Goods received from Abroad. enter them on the Blank or Right-side; so at first View may be seen how the Accompt stands, &c. The

The next is a Bill-book, wherein are entered Bills of Exchange accepted, and when they become due; and when paid, they should be made so in the Margin.

The next is a book of Household Expences, for the monthly Charge spent in House-keeping; likewise Apparel, House-rent, Servants Wages, and Pocket Expences; and this may be monthly summed up, and carried to the Credit of Cash.

Besides the above-mentioned, there must be a Book to copy all Letters sent Abroad, or beyond the Sea; wherein the Name of the Person or Persons to whom the Letter is sent, must be written pretty full, for the reader finding the same.

The next, (and what is very necessary) a Receipt-book, wherein are given Receipts for Money paid and expressed for whose Account or Use, or for what it is received; to which the receiving Person must set his Name for himself, or some other, with the Year and Day of the Month on the Top.

Lastly, A Note, or Memorandum-book, to minute down Affairs that occur, for the better help of Memory; and is of great Use, where there is a Multiplicity of Business.

Having given an Account of the several Books and their Use, the next Thing necessary will be, to give some few Rules of Aid, to enable the Book-keeper to make proper Entries; and to distinguish the several Debtors and Creditors, *viz.*

First, For Money received, make Cash Dr. to the Party that paid it (for his own Account) and the Party Cr.

Secondly, Money paid, make the Receiver Dr. (if for his own Account) and Cash Cr.

Thirdly, Goods bought for ready Money, make the Goods Dr. to Cash, and Cash Cr. by the Goods.

Fourthly, Goods sold for ready Money, just the contrary, *i. e.* Cash Dr. and Goods Cr.

Fifthly, Goods bought at Time; Goods bought are Dr. to the Seller of them, and the Seller Cr. by the Goods.

Sixthly, Goods sold for Time, just the contrary, *i. e.* the Party that bought them is Dr. to the Goods, and the Goods Cr. by the Party.

Seventhly, Goods bought, Part for ready Money and the rest for Time: First, make the Goods Dr. to the Party for the Whole; Secondly, make the Parrrty Dr. to Cash for the Money paid him in Part of those Goods.

Eighthly, Goods sold, Part for ready Money, and the rest for Time; First, make the Party Dr. to the Goods for the Whole. Secondly, Cash Dr. to the Party, received of him in Part of those Goods.——Or either of these two last Rules may be made Dr. to Sundries; as Goods bought, Dr. to the selling Man for so much as is left unpaid, and to Cash for so much paid in ready Money: And so on the contrary for Goods sold.

Ninthly, When you pay Money before it is due, and are to have Discount allowed you, make the Person Dr. to Cash for so much as you pay him, and to Profit and Loss for the Discount; or make the receiving Man Dr. to Sundries as before.

Profit and Loss is Dr.

To Cash for what Money you pay and have nothing for it, as Discount of Money you receive before due, and for Abatement by Composition, Household Expences, &c.

Per Contra Cr.

By Cash for all you receive, and deliver nothing for it; a Discount for prompt Payment, any Legacy left you, Money received with an Apprentice, and by the Profit of every particular Commodity, you deal in, by Ships in Company, by Voyages, &c.

To balance or clear an Account when full written.

FIRST, if the Dr. Side be more than the Credit, make old Account Cr. by the New; and if the contrary, make the new Account Dr. to the Old, But if the Dr. Side be less than the Credit, then make the old Account Dr. to the New, and the new Account Cr. by the Old, for such a Rest or Sum as you shall find in the Account.

2. An Account of Company, wherein you have placed more received of another than his Stock; then add as much on the Debit Side as you find on the Credit Side; to the End that in the New Account, you may have so much Debit as you put in, and so much Credit as you have received.

3. In Accounts of Merchandize, you must enter the Gain or Loss, before you make the old Account Cr. by the

the New, and the New Dr. to the old, for the Remainder of the Goods unfold.

4. In the Foreign Accompts, which you are to keep with a double Column for the Dollars, Crowns, or other Foreign Coins, as well as their Value in *l. s. d.* which have been received or paid, by Bills of Exchange for Goods sold by Factors or Correspondents, or bought by them for the Accompts before; here you must first balance the said inward Column of Dollars, Crowns, &c.

To remove an Account full written to another Folio.

Sum or add up the Dr. and Cr. Sides, and see the Difference, which place to its opposite: As admit the Cr. Side exceeds the Dr. then you are to write the Line in the old Accompt to balance on the Dr. Side, to answer the Line on the Cr. Side of the New Accompt.

How to balance at the Year's End, and thereby to know the State of your Affairs and Circumstances.

YOU must make an Accompt of Balance on the next void Leaf or Folio of your Ledger to your other Accompt; but after so done, do not venture to draw out the Accompt of Balance in the said Folio, 'till you have made it exact on a Sheet of Paper, ruled and titled for that Purpose because of Mistakes or Errors that may occur or happen in the Course of balancing your Ledger; which are to be rectified, and will cause Erasurements or Alterations in that Accompt, which ought to be very fair and exact; and after you have made it to bear in the said Sheet, copy fair the said Accompt of Balance in the Ledger.

The Rules of balancing are these, viz.

1st. Even your Account of Cash, and bear the Nett Rest to balance Dr.

2^{dly}. Cast up all your Goods as bought and those sold, of what Kind soever, in each Accompt of Goods; and see whether all Goods bought, be sold or not; and if any remains unfold, value them as they cost you, or according to the present Market Price, ready Money; and bear the Nett Rest to balance Dr.

3^{dly}. See what your Goods or Wares severally cost, and also how much they were sold for, and bear the Nett Gain or Loss to the Accompt of Profit and Loss.

4^{thly} Even all the personal Accompts with your Drs. and your Crs. in order as they lie, and bear the the Nett Rest of them severally to Balance.

5thly. Even your Voyages, your Factors Accompts, where in is either Gain or Loss, and bear the Nett Gain or Loss to the Account of Profit and Loss, and the Goods unfold to Balance.

6thly. Even the Account of Profit and Loss, and bear the Nett Rest to Stock or Capital, as an advance to your Stock or Capital.

7thly. Even your Stock, and bear the Nett Rest to Balance, Cr.

Then cast up the Dr. and Cr. Sides of your Balance; and if they come out both alike, then are your Accompts well kept, otherwise you must find out your Error by pricking over your Book again, to see whether you have entered every Dr. and Cr. in the Ledger as you ought.

Note, By pricking over the Book is meant, an examining every Article of the Journal, against the Ledger, and marking it thus, : or thus †; and upon the second Examination thus †; and upon a third Examination thus §; or any other Mark.

Note also, In all Accompts of Goods, you must keep a Column in the Middle of the Leaf, of each Side for Number Weight and Measure.

Though all that hath been said in relation to Book-keeping and the several Rules thereunto belonging, may seem a little abstruse to the altogether Unlearned therein, yet there is no such mighty Difficulty to instruct them as they may imagine: For these following Hints may render what hath been already said intelligible to an ordinary Capacity.

1st. Stick close to the Text, or general Rule beforementioned, viz. That all things received, or the Receiver, are Debtor to all Things delivered, or the Deliverer; for this Rule holds good in all Cases.

2d. When the Dr. (whether Person or Goods) is known, the Cr. is easily understood without mentioning it: for if *A.* be Dr. to *B.* then *B.* is Cr. by *A.* for what Sum soever it be. Also, if Goods be Dr. to *C.* then *C.* is Cr. by those Goods for the Sum they amount to——— This I mention because that most Authors (if not all) that I have met with on the Subject of Book-keeping, spend a great many words which I think (begging their Pardon If I err) might be saved, in declaring the Creditor, as well as shewing the Debtor, when it may be understood, as aforesaid.

3dly. This Art of *Italian* Book-keeping is called *Book-keeping* by *Double Entry*, because there must be two Entries; the first being a charging of a Person, Money, or Goods, and the second a discharging of a Person, Money or Goods.

4thly. *strictly note*, That if the first Entry be on the Dr. or Left-hand side of your Ledger, the next or second Entry must always be made on the Right or Credit Side of your Ledger; for whenever one Person or Thing is charged then always another Person or Thing is discharged for the said Sum, let it be what it will.

And so it is in balancing or evening an Accompt, and carrying it to another Folio; for if the old Accompt be e-vened by the Balance on the Credit Side, then the new Ac-
compt must be debited or charged on the Debit Side, for the Sum that balanced the old Accompt.

Much more might be said on this Art of Book-keeping, if I had Room; but I have plainly spoke to the principal Fun-
damentals thereof, which I hope may be sufficient for the In-
struction and Improvement of any intelligent Reader.

*The next Matter I shall go upon is, to shew, or give Ex-
amples of various Kinds of Receipts, and Promissory Notes; al-
so Bills of Parcels in different Trades, likewise Bills of Book-
debts, Bills of Exchange, with Remarks on them; and some o-
ther Precedents of Writing in Trade & Mercantile Affairs.*

And first of Receipts of different Forms.

<p>R Eceived March, 12. 1779, of Mr. } <i>Anthony Archer</i>, the Sum of Six Pound Nine Shillings; I say received for my Mas } ter Bryan Barry, per me:</p>	<p>l. s. d. 6-09-00</p>
<p><i>Caleb Catchmoney.</i></p>	

<p>R Eceived of Mr. Kendrick Keptouch, Ten Pound Eleven Shillings & Six- pence in full Payment, per me.</p>	<p>} 10-11-06</p>
<p><i>Henry Hasty.</i></p>	

Note. The Sum received must alway be expressed in Words, at Length, and not in Figures, in the Body of the Receipt: but it may, and ought to be expressed in Figures behind a Brace (as in the two foregoing Examples) or else between two Lines on

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the Left-hand of the Name at the Bottom of the Receipt (as is shewn in the Promissory Notes in p. 178) as well as in the Body of the Receipt.

When a Receipt is given in a Book, there is no occasion to mention the Man's Name of whom you receive the Money, because that is implied, he being the Owner of the Book.

A Receipt in part of Goods sold.

<p>R Eceived the 12th of March, 1779, of Mr. Timothy Trustlittle, Fifty Pounds in part of Indico, sold him 12th Instant, per me</p>	}	<p><i>l. s. d.</i> 50—00—00</p>
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Lawrence Lovemoney.

A Receipt given in a Receipt Book.

<p>R Eceived the 26th of November, 1779. the Sum of Forty-five Pounds, by the Order, and for the Account of George Greedy, Esq. per</p>	}	<p>45—00—00</p>
---	---	-----------------

Timothy Trustly.

<p>R Eceived the 28th of September, 1779, of Mr. Daniel Davenport and Com- pany, One Hundred Pounds, on Account of self and Partner, per</p>	}	<p>100—00—00</p>
--	---	------------------

James Jenks.

<p>R Eceived the 29th of September 1779, of Mr. Peter Punctual, Fifty-five Pounds Sixteen Shillings and Nine-pence in Part of Tobacco sold him the 28th of August last per</p>	}	<p>55—16—09</p>
---	---	-----------------

Fabian Funk.

<p>R Eceived the 2d of October, 1779, of the Honourable East India Company, Three Hundred and Fifteen Pounds Ten Shillings, per Order and for the Account of Peter Pepper, per</p>	}	<p>315—10—00</p>
---	---	------------------

Stephen Storox.

<p>R Eceived October 4th, 1779, of the Go- vernor and Company of the Bank of England One Thousand Six Hundred Pound Ten Shillings, for Self and Company, per</p>	}	<p>1600—10—00</p>
--	---	-------------------

Leonard Longpurje.

Received the 6th of October 1779. of the } l. s. d.
 Worshipful Company of Grocers, For- } 49--16--00
 ty-nine Pounds Fifteen Shillings, in full }
 Payment for my Father Peter Plumbe,
 per me

Peter Plumbe, junior

Received the 7th of October, 1779 of the }
 Right Honourable John Wilkes, Esq. } 60--00--00
 Lord Mayor of London, the Sum of Sixty }
 Pounds for the Use of the Worshipful }
 Company of Joiners per

Caleb Careful, Clerk

A Rent Gatherers Bill,

Received the 8th of September, 1779 }
 of Mr. Aaron Arabel, in Money }
 Eighteen Pounds, and allowed him for } 25--00--00
 Land Tax Five Pounds, and for repairs }
 Two Pounds, in all Twenty-five Pounds }
 full for half a Year's Rent due at Michaelmas last; I say received for the Use of }
 Laurence Letland, Esq; by Virtue of }
 his Letter of Attorney, per

Robert Rentroll.

Received of Mr. Timothy Tenant this }
 10th Day of Oct. 1779, Six Pounds }
 for a Quarter's Rent due at Michaelmas } 6--00--00
 last, for my master Lancelot Letfarm, }
 per

Francis Faithful.

Received October 11th, 1779 of Mr. }
 Peter Bishop, Twenty-nine Pounds }
 Six Shillings, in Part of a Bill of Sixty } 29--06--00
 Pounds, due, the 3d of Xber next, to }
 Mr. Samuel Shuffle, per

Francis Fidel.

A Receipt on the Back of a Bill of Exchange.

October 12, 1779, received the full }
 Contents of the within mentioned } 500 Pcs. of 8
 being 500 Pieces of Eight, per

Nathan Needy.

Pro-

Promissory Notes.

I Promise to pay to Mr. *Timothy Teazle*, or Order, Sixty Pounds on the 12th of this Instant October. Witness my Hand this 4th of October, 1779.

Daniel Dilatory

l. 60--00--00

May 1st. 1779.

I Promise to pay to the Honourable the Directors of the *South Sea Company* or Bearer, on Demand. Four Hundred and Fifty Pounds, for my Father, *James Jones*,
William Jones.

l. 450

4th May, 1779.

I Promise to pay to the Governor and Company of the Bank of *England*, or Order, on, Demand. Two Thousand Pounds.

Nahum Neednothing.

l. 2000

May, 5th, 1779.

I Promise to pay *Miles Man* and Company, or Bearer, on Demand, Seven Hundred Fifty-six Pounds Ten Shillings and Nine pence, for Master, *Robert Regulate.*

Lewis Martin.

l. 756--10--09

May 6th. 1779.

I Promise to pay to the Honourable *East India Company* or Bearer, upon Demand, Five Hundred Pounds for *Henry Hudson*,

Martin Moneybag.

l. 500

May, 8th. 1779.

I Promise to pay Mr. *Christrober Cash*, or Order, three Months after Date, Five Pounds for Value received. Witness my hand this 8th Day of May, 1779.

l. 5--00--00

Robert Buck.

A Note given by Two.

WE, or either of us, promise to pay to Mr. *Matthew Mistrust*, or his Order, Six Pounds Sterling, on Demand, for Value received. Witness our Hands this 27th of October, 1779.

Nathan Nedy.
Samuel Surety.

£. 6--00--00

Witness Nicholas Notice.

A Bill of Debt.

Memorandum, That I *William Want* of London, Weaver do owe, and am indebted unto Mr. *Timothy Trust*, *Westminster*, Watch-maker, the Sum of Twenty-five Pounds Six Shillings of lawful Money of *Great-Britain*; which Sum I promise to pay to the said *Timothy Trust*, his Executors, Administrators, or Assigns, on or before the 10th Day of July next ensuing. Witness my hand this 22d Day of October, 1779.

William Want.

Witness Titus Testis.

Bills of Parcels.

IT is usual, when Goods are sold, for the Seller to deliver to the Buyer, with the Goods, a bill of Parcels, which is Note of their Contents and Prices, with a Total of their Value cast up, &c. These Bills ought to be handsomely wrote, and in a methodical Order according to the best and customary Way of each particular Trade.

I shall therefore shew the Form of Bills of Parcels in some Trades and Professions, with the shortest Methods of casting up the several Articles in each Bill.

A Mercer's Bill.

London, May 22, 1779.

Bought of *Able Atlas*, and *Ben. Burdett*, viz.

- 12 Yds $\frac{3}{4}$ of rich flowered Sattin, at 12s. 6d per Yd.
- 8 Yds of sprigged Tabby, at 6s. 3d. per Yd.
- 5 Yds $\frac{1}{2}$ of Farrington, at 6s. 8d. per Yd.
- 6 Yds of Mohair, at 4s. 2d. per Yd.
- 17 Yds $\frac{1}{2}$ of Lutestring, at 3s. 4d. per Yd.

£. 16--7--8 $\frac{1}{4}$

Sometimes the Money is paid presently, then the Receipt is made as follows:

Re-

Received the 26th of May, 1779, Sixteen Pounds, Seven Shillings and Eight-Pence, in full for this Bill, for my Master *Abel Atlas*, and Company, per me

Francis Fairspoken.

A Woollen Draper's Bill.

London, September 24th, 1779.

Bought of Benjamin Broadcloth, 22d of September, 1779, viz
 7 Yds of fine *Spanish Black*, at - - - 18--4 per Yd.
 5 Yds $\frac{1}{2}$ of ditto, at - - - 11--4 ditto
 6 Yds $\frac{3}{4}$ of fine mixed Cloth, at - - 15--4 ditto
 16 Yds $\frac{1}{2}$ of Frize, at - - - 3--6 ditto
 4 Yds of Drab-de-berry, at - - - 13--5 ditto
 5 Yds $\frac{1}{4}$ of Superfine *Spanish Cloth*, at - 18-10 ditto

A Linen Draper's Bill.

March 10th, 1779.

Bought of Marmaduke Muslin, viz.

16 Ells of Dowlas, at 1s. 4d. per Ell.
 14 Ells of Lockram, at 1s. 3d. per Ell.
 32 Ells $\frac{1}{2}$ of Holland, at 3s. 5d. per Ell.
 1 Piece of Cambrick, at 15s.
 85 Yds $\frac{1}{2}$ of Diaper, at 1s. 10d. per Yd.
 19 Yds $\frac{3}{4}$ of Damask, at 4s. 3d. per Yd.
 2 Pieces of Muslin, at 18s. 10d. per Piece.

The several Articles of these Bills are purposely omitted being cast up, for the Exercise of the Reader in the Rule of *Practice*, or in those of *Multiplication of Money* before shewn; which indeed is the best Method of all, for the Ready casting up the Articles contained in any Bill of Parcels whatsoever.

We'll take the last Article of the Woollen-draper's Bill, viz. 5 Yds $\frac{1}{4}$, &c. at 18s. 10d. per Yard.

18--10	18--10	
5 $\frac{3}{4}$	7	
1. 4--14--2	8) 131--10	
16--5 $\frac{3}{4}$		
Facit 15--10--7 $\frac{3}{4}$	16---5 $\frac{3}{4}$	

In this Example the Price is multiplied by the Quantity, viz. 5 Yards $\frac{3}{4}$, according to the Rules delivered in *Multiplication*

cation of Money; and the Product by 5 is $l. 4-15-2$: Then for the $\frac{7}{8}$ of a Yard, I multiply the Price of the Integer, *viz.* $18s. 10d.$ by the Numerator of the Fraction, *viz.* 7, and divide by the Denominator 8, and the Quotient is $16s. 5d. \frac{3}{4}$, agreeable with the Rule spoken to in the Doctrine of Fractions.—Which $16s. 5d. \frac{3}{4}$ added to the Product of $18s. 10d.$ multiplied by 5, gives $l. 5-10-7\frac{3}{4}$, as in the foregoing page.

A Grocer's Bill.

Bought of *Robert Raisin*, and *Peter Plumb*, October the 4th, 1779, *viz.*

	C.	qrs.	lb.	l.	s.	d.
Sugar 2 Hds. qt.	—	17	2—17	at 1—10—6	per C.	
Raisins 3 Barrels	—	6	1—19	at 1—14—5		
Tobacco 1 Hhd.	—	4	0—12	at 4—19—4		
Rice 1 Barrel	—	1	0—15	at 2—16—4		
Pepper 1 Bag	—	1	3—19	at 3—12—4		
Brimstone	—	2	1—19	at 1—19—1		

A Hosier's Bill.

Bought of *Silvester Slipstocking*, October 5, 1779, *viz.*

5 Pair of Women's mixt Worsted Hose, at	—	5s.	7d.
3 Pair of Women's Silk Hose, at	—	9s.	4d.
22 Pr. of Men's Woollen ditto, at	—	3s.	2d.
8 Pr. of Women's ditto, at	—	2s.	2d.
21 Yds. of Flannel, at	—	1s.	11d.
8 Pair of Thread Hose, at	—	3s.	4d.

A Fishmonger's Bill.

Bought of *Leonard Ling*, 6th of October, 1779.

3 C. of Haberdine, at	—	l. 7—10—6	per C.
1 $\frac{1}{2}$ of Ling, at	—	8—12—6	
1 C. $\frac{1}{2}$ of Stockfish	—	4—10—5	
6 Barrels $\frac{1}{2}$ of White Herrings	---	3—10—2	
1 Barrel of red Herrings	—	2—12—6	
95 Dried Salmon, at	—	0—10—2	

Note, Of Haberdine or Ling, 124 is a Hundred; of Stockfish and Herrings, 120 to the Hundred, 1200 to a Thousand, and 12 Barrels to a Last.

*A Leatherfeller's Bill.*Bought of *Henry Hide*, the 17th of *October*, 1779. viz.

		s.	d.
15	Large oil'd Lamb Skins, -- --	1	2½ per Skin.
13	Kipp of Goat Skins, at -- --	3	4
107	Allom'd Sheep Skins, at -- --	1	3
19	Calve Skins, at -- -- --	4	3
85	Oil'd Buck Skins, at -- --	12	6
10	<i>Russia</i> Hides, at -- -- --	12	9
60	Dicker of Hides, at -- 15	11	6

Note, 50 Goat Skins make a Kipp; and other Skins are Five Score to the Hundred. A Dicker is 10 Hides or Skins; and 20 Dickers a Last.

*A Pewterer's Bill.*Bought of *Andrew Antimony*, October the 17th, 1779, viz.

		s.	d.
9	Hard Metal Dishes, wt. 42 at 14d. per lb.	2	9
1	Dozen of ditto Plates	0	17
1	Chamber-pot of ditto	0	4
1	Standish of ditto	0	5 10
2	Tankards of ditto	0	4 6
8	Best Spoons	0	4 6
18	Hard Metal Porringers	0	3
1	Salt of ditto	0	10
1	Set of Castors	0	10

5 7 10

*Bills on Book Debts.**A Woollen Draper's Bill.*

1776	Mr. Francis Frize, Dr.	s.	d.
April 20	To 16 Yards $\frac{1}{2}$ of Black Cloth,		
	at	18	3 per Yd.
ditto 24	To 4 Yards $\frac{1}{4}$ of Drab-de-berry,		
	at	15	6
May 4	To 35 Yds. of mixt Grey Cloth,		
	at	10	5
17	To 9 Yds. of fine ditto, at	17	3
June 12	To 12 Yds. $\frac{1}{2}$ of fine Broad		
	Cloth, at	17	3

If the Gentleman pays the whole Bill, then make the Receipt thus :

Received the 19th of October, 1778, of Mr. }
Francis Frieze, the Sum of Fifty-four Pounds, }
£s. in full for this Bill, and of all Accounts, } 54. &c.
for my Master, David Draper. }
Per Mich^l de la Hirewell.

A Mercer's Bill.

1779	Madam Dinah Dilatory, Dr. to Bryan Brocade,
	viz.
	Yds.
March 16	To 16½ of flowered Sattin, at 14 9 per Yd.
April 14	To 14 of Venetian Silk, at - 11 8
ditto 16	To 19 of Mohair, at - - 6 3
May 16	To 14½ of flowered Damask, at 9 7
June 7	To 5¼ of Genoa Velvet, at 21 6
ditto 25	To ¾ of Lutestring, at - 4 7

If part of the Bill is paid, write thus :

Received of Madam Dinah Dilatory, }
Twelve Pounds Ten Shillings, in Part } l. s. d.
of Payment, for my Master, Bryan } 12 10 00
Brocade, per

Henry Hunter.

A Corn Chandler's Bill.

1779	Mr. Robert Racer, Dr. to Lionel Livery.
	s. d.
April 24	To 5 Quarters of Oats, at 3 3 per Bush.
May 16	To 9 Bushels of Beans, at 4 10
June 19	To 7 Bushels of Bran, at 1 10
	To 19 Bushels of Oats, at 1 11
ditto 25	To 16 Bushels of Beans, at 3 11

†

A Tobacconist's Bill.

1779		Mr. Francis Funk, Dr. to Richard Raifecloud,
		viz. d.
May	1	To 1 Hhd. of Tobacco, qt. nett,
		596lb. at _____ 10 $\frac{1}{2}$ per lb.
ditto	25	To 1 Box, qt. 75 $\frac{1}{2}$ lb. nett, at - 11 $\frac{1}{4}$
June	1	To 5 Bags of old Spanish, qt. nett,
		671lb. at _____ 3 $\frac{1}{2}$
July	12	To $\frac{1}{2}$ Hhd. qt. 334 Gross Tare 42,
		nett, 292lb. at _____ 5 $\frac{1}{2}$
7ber	7	To 2 Rolls of Tobacco, qt 94lb. at 9 $\frac{1}{2}$

A Stationer's Bill.

1779		Mr. Siscera Scribbler, Dr. to Phineas Foolscap,
		viz.
		Reams. s. d.
July	12	To 57 of Demy Paper, at - 10 9 per R.
ditto	31	To 195 of 2d Foolscap, at - 6 3
Aug.	24	To 375 of 2d Demy, at - 8 2
7ber.	6	To 95 French Royal, at - 2 6
8ber.	26	To 26 Rolls of Parchment, 15 11

Note, A Roll of Parchment is 60 Skins; a Ream of Paper 20 Quires; and a Bale of Paper 10 Reams.

A Bricklayer's Bill.

1779		Mr. Martin Messuage, Dr. to Peter Pantile,
		viz.
March	27	To 25 Thousand Bricks, 16s. per M.
ditto	30	To 11 Thous. Plain Tiles, at 20s. 6d. per M.
April	9	To 28 C. of Lime, at 12s. per C.
ditto	1	To 20 Load of Sand, at 3s. 6d. per Load.
May	26	To 140 Ridge Tiles, at 8s. 6d. per C.
June	24	To 90 Days Work myself, at 3s. per Day.
		To 90 Days my Man, at 2s. 6d.
		To 90 Days another Bricklayer, at 2s. 6d.
		To 90 Days for 2 Labourers at 20d. a Day each.

Note, 1000 plain Tiles is a Load; and 25 Bags or Bushels of Lime 1 C. A Brick must be 9 Inches long, and 4 Inches $\frac{1}{2}$ broad. Bricks are of three Sorts, Plaine Bricks, Red, and Grey Stock Bricks.

Here

Here it will be convenient to give a general Rule for the casting up any thing to be sold by the Thousand ; as Bricks, Tiles, Clinkards, or *Flanders* paving Bricks, and several other Things mentioned in the Book of *Rates*, viz. Barrel Hoops, Goose Quills, Oranges and Lemons, Squirrel Skins, Billets, &c.

And the easy Rule is this, viz.

Multiply the given Number by the Shillings in the price (if the price be at so many Shillings *per* M) and always cut off three Figures or Places towards the Right-hand ; and the Figures towards the Left-hand are Shillings, which divide by 20, to bring them into Pounds ; and those Figures separated towards the Right-hand, multiply by 12, the next inferior Denomination ; and still cut off, or separate three places towards the Right-hand, and the Figures toward the Left are Pence ; and the three last Figures cut off, multiply by 4 ; and still separate three places towards the Right-hand, and the Figures towards the Left are Farthings. And if the price be Shillings and Pence, or Shillings, Pence, and Farthings *per* Thousand, then multiply by the Shillings as before, and take parts for the Pence and Farthings, as in the Rule of *Practice* ; add these together, and proceed as above directed.

Example 1.

$$\begin{array}{r}
 24650 \\
 \underline{17} \\
 172550 \\
 \underline{24650} \\
 419 \mid 050 \\
 \underline{12} \\
 0 \mid 000 \\
 \underline{4} \\
 2 \mid 400
 \end{array}
 \left. \vphantom{\begin{array}{r} 24650 \\ 172550 \\ 24650 \\ 419 \mid 050 \\ 12 \\ 0 \mid 000 \\ 4 \\ 2 \mid 400 \end{array}} \right\} \text{Answ. } 419s. 00d., \text{ or } 20l. 19s. 0\frac{1}{2}d.$$

Example 2.

6d. --- $\frac{1}{4}$. 261324 Plain Tiles at 16s. 6d. p. Thousand.

$$\begin{array}{r}
 16 \overline{) 261324} \\
 \underline{1567944} \\
 261324 \\
 \underline{130662} \\
 4311846 \\
 \underline{12} \\
 10 \mid 152 \\
 \underline{4} \\
 608
 \end{array}
 \left. \begin{array}{l} \\ \\ \\ \\ \\ \\ \end{array} \right\} \text{Answ. } 4311s. \text{ } 10d. \text{ } \frac{6 \times 8}{1000} f. \text{ or } 215l. \text{ } 11s. \text{ } 10d.$$

When Things are sold by the Hundred. as *Dutch* and *English* Pantiles, then follow this Rule, *viz.*

Multiply the given Quantity by the Shillings in the price, and take parts for the Pence and Farthings (if any before; then from the Right-hand of the Sum cut off two places, and proceed as in the last Rule.

Example 3.

1726 Pantiles, at 7s. per C.

$$\begin{array}{r}
 7 \overline{) 1726} \\
 \underline{120 \mid 82} \\
 12 \\
 \underline{9 \mid 84} \\
 4 \\
 3 \mid 36
 \end{array}
 \left. \begin{array}{l} \\ \\ \\ \\ \end{array} \right\} \text{Answ. } 120s. \text{ } 9d. \text{ } \frac{3}{4} \text{ or } 6l. \text{ } 00s. \text{ } 9d. \text{ } \frac{3}{4} \text{ and } \frac{3 \times 6}{1000} \text{ of a Farthing.}$$

Example

6d. — $\frac{1}{2}$

2964 Stock Bricks, at 2s. 6d. per C.

2	
<hr/>	
5928	
1482	
<hr/>	
74	10
	12
<hr/>	
1	20
	4
<hr/>	
1	80

Answer. 74s. 1d. $\frac{8}{100}$ f. or 3l. 14s. 1d.

OF BILLS OF EXCHANGE.

BILLS of Exchange are either Inland, or Foreign. The Inland Bills are drawn by one Trader in one City or Town, upon another of another City or Town, in the same Kingdom; as *London* upon *Bristol*, or *Exeter* upon *London*, &c. and these chiefly concern our Shopkeepers, and wholesale Traders, either of Town or Country; and the Foreign more immediately concern the Merchants.

Bills of Exchange, if handsomely drawn, must be written in a fair Hand, on a long Piece of Paper, about 3 Inches broad, and writ in Form after the following Precedents.

A Bill payable at Sight.

London. 8th May, 1779.

AT Sight hereof, pay to Mr. *George Greedy*, or his Order, the Sum of Fifty Pounds, for Value received of *Christopher Cash*; and place it to Accompt, as per Advice from,

To Mr. Peter Punctual,
Grocer in High-Street,
Bristol.

Your humble Servant,

Daniel Drawbill.

Note, A Bill at Sight is payable three Days after the Acceptor seeth it.

Exon,

Exon, May 9, 1779.

S E V E N Days after Sight hereof pay to Mr. *Nathan Needy*, or his Order, twenty-four Pounds ten Shillings, for the Value received here of Mr. *Timothy Transfer*, and place it to Account, as per Advice from
To Mr. Simon Certain, Your Friend and Servant,
Haberdasher in Milk- *Michael Moneyman.*
Street, London.

If Mr. *Needy* sends his Servant, *Andrew Benson*, to receive the Money, after he has wrote his Name on the Back of the Bill (which is his Order) the Servant must write a Receipt to his Master's Name, thus:

RECEIVED *May 10th 1779*, the Full Contents of the within-mentioned Bill, being Twenty-four Pounds, Ten Shillings. *Witness,*

Andrew Benson.

Nathan Needy.

A Foreign Bill of Exchange.

London 6th May, 1779, for 460 Crown, at 56d.
 $\frac{2}{3}$ Sterling per Crown.

A T Usance pay this my first Bill of Exchange (my second or third not being paid) unto Mr. *Henry Vernon*, or Order, Four Hundred and Sixty Crowns, at 56d $\frac{2}{3}$ per Crown, for the Value received of Mr. *Samuel Thompson*, and pass it to Account, as per Advice from, Sir,
To Mr. Will. Walker, Your humble Servant,
Merchant in Paris.

Ebenezer Reynolds.

Another.

London 14th May, 1777, for 480 Dollars, at 55d.
 $\frac{1}{4}$ per Dollar.

A T three Usance pay this my first Bill of Exchange unto Mr. *William Wealthy*, or Order, Four Hundred and Eighty Dollars, at 54d. $\frac{1}{4}$ Sterling, per Dollar for the Value received of himself, and place it to Account, as per Advice from,
To Mess. Daniel and Your humble Servant,
David Bernardiston, *Mark Mercator.*
Merchants in Aleppo.

Note,

Note, *Usance* between *England* and *France* or *Holland*, is one Calendar Month; between *England* and *Spain*, or *Portugal*, two Months; between *England* and *Italy*, three Months, &c.

Once more.

Bristol, 14th May, 1779, for 600 Pieces of Eight, at 53d $\frac{3}{4}$ per Piece.

A T double *Usance* pay this my first Bill of Exchange unto Mr. *Lawrence de Luz*, or his Order, Six Hundred Pieces of Eight Mexico, at 53d $\frac{3}{4}$ Sterling, per Piece of Eight, for Value received of *Gomez Henriquez*, and pass it to Account, as per Advice from yours,

To Mr Simon Surepay, William Henry Hern.
Merchant in Leghorn.

Notes on Bills of Exchange.

1. T H E Acceptor of any Bill is become absolute Debtor to the Person to whom the Bill is payable for the Content thereof.
2. The Person to whom the Bill is payable must demand the Money the very Day it becomes due, and if the Acceptor dies before it becomes due, it must be demanded of the Executor or Administrator.
3. The Drawer of any Bill must always give his Correspondent a Letter of Advice, that he hath drawn such a Bill on him for such a Sum, &c.
4. None may pay a Bill without such a Letter of Advice.
5. In *England* a Bill is due the third Day after the Expiration of the Time mentioned in the Bill.

Of Indorsing.

I T frequently happens, that between the Acceptance of a Bill and the Time of Payment, the Party to whom it is first made payable hath occasion to pay it away: If so, he writes his Name on the Back of the Bill, which is his Order (as said before) and gives it to the Person he is indebted to, and then he is empowered to receive the Money: And it may be, the second Person also wants to pay it away, and then he likewise writes his Name under the other, and delivers it to a third Person to receive the Money: And it may be, the third does the same, and delivers it to a fourth Person, &c.

All

All that do so, are Endorsers ; and he that last hath the Bill, if the Acceptor will not pay it, may sue him, or the Indorsers, or Drawer, or any of them, for the Money.

An Indorsement is generally in these, Words, viz. *Pay the Contents of the within-mentioned Bill to Henry Hasty.*

George Greedy.

But generally the Name only is accounted sufficient.

Of Protestiing.

WHEN a Bill is to be Protested, the Party that hath the Bill must go to a public Notary (not a common *Scrivener*) whose Business it is ; and he goes with you to the Acceptor's House, and demands Payment, &c. And then he draws up a *Protest* according to Law ; which is to be returned to the Drawer within the Time limited, &c.

It is needless to give here the Form of a *Protest*, because no Man can do it of himself.

A Bill of Debt.

KNOW all Men by these Presents, That I *Lawrence Lackcass*, of *Southwark*, *Vintner*, do owe and am indebted unto *Charles Creditman*, of the same place, *Saltier*, the Sum of one hundred and fifty pounds of lawful Money of *Great-Britain* ; which said Sum I promise to pay unto the said *Charles Creditman* his Executors, Administrators, or Assigns, on or before the 14th of *July* next ensuing the Date hereof. Witness my Hand and Seal this 13th Day of *May*, 1779.

Sealed and delivered
in the Presence of

Lawrence Lackcass.

A Bill for Money borrowed.

REceived and borrowed of *Oliver Overcass*, of *London*, Merchant, Fifty Pounds, which I do hereby promise to pay on Demand. Witness my hand this 13th Day of *May*, 1779.

l.50

Peter Penury.

The

The Charge of Noting and Protesting a Bill.

Noting { within the City 1--6 } Pro- { within 3-0
 { without the City 2--6 } testing { without 5-0

The Form of a Bill of Lading.

SHIPPED by the Grace of God, in good Order and well-conditioned, by *Edward Export, of London*, Merchant, in and upon the good Ship called the (*Bilboa Merchant of London*) whereof is Master under God for this present Voyage (*Martin Mizen of London* Mariner) and now riding at Anchor in (the Port of *London*) and by God's Grace bound for (*Cadiz*) to TB say 1 (Bale of Stocking Baize, and 1 Trunk, containing five hundred Pair of Silk Stockings, Contents as per Invoice) being marked and numbered as per Margin, and are to be delivered in the like good Order at the aforesaid Port of (*Cadiz*) the Danger of the Seas only excepted, unto (Mr. *Thomas Drake*, Merchant, there) or to his Assigns, he or they paying Freight for the said Goods (three Pieces of Eight per C. Weight) with Primage and Average accustomed. In witness whereof the Master or Purser of the said Ship hath affirmed to (three) Bills of Lading, all of this Tenor and Date, one of which (three) Bills being accomplished, the other (two) to stand void. And so God send the good Ship to her desired Port in Safety. *Amen.*

Dated in *London*, the 14th of *May*, 1779, Inwites and Contents unknown to *Martin Mizen*.

Note, The several Words included in the Parenthesis, are to be put into the several vacant Places that are in a Blank Bill of Lading.

Note also, Average is the general Allowance made to the Master of the Ship, of 1*d.* or 2*d.* in every Shilling Freight; Primage, a small Allowance to be distributed among the Sailors.

*The Form of an Invoice.**Port-Royal in Jamaica, May 15, Anno 1779.*

INVOICE of five Barrels of Indico, five Hhds of Sugar, five Hhds of Pimento, shipped on board the *George of London*, *George Jones*, Commander, for Account and Risque of Messrs. *John and Thomas Fisher of London*, Merchants, being mark'd and number'd, as per Margin; Contents, Costs and Charges, as in the following Example.

	Indico 5 B.		l.	s.	d.
niz.	143				
I.F.	143				
No.	146				
121	152				
to	172				
125					
	756lb. Nett, at 2s. 2d. per lb.		81	18	—
	Sugar 5 Hhds.				
	C. qr. lb.	Tare C. qr. lb.			
	11—3—27	1—2—19	Gross	68	0—00
126	12—2—19	1—3—00	Tare	8—3—12	
to	13—2—13	1—2—16			
130	14—1—15	1—3—11	Nett	59—0—16	
	15—1—10	1—3—22	at 24s. p. C.		70 19 5
	67—0—00	8—3—12			
	Pimento lb.				
	5 Hds. Tare	2026 Gross			
	lb. lb.	389 Tare			
N	332—84				
131	396—72	Nett 1637 at 11d. $\frac{1}{2}$ per lb.	78	8	9 $\frac{1}{2}$
to	410—81				
135	376—70	Charges.			
	512—82	To Cost of 5 Barrels and 10 Hhds.	4—7—9		
	2026—389	To Storage	1—0—0	5	7 9
		To Commission at 5 p. C.	11 10	11 $\frac{1}{2}$	6 $\frac{1}{2}$
		Errors excepted per A. B.			

An Account of Sale.

Port-Royal in Jamaica, May, 15th. 1779.

Account of Sale of 2765 Ells of brown Ozenbrigs, 1112 Yds. of Blue Hartford, 2 Pieces of Gray Cloth, qt. 39 Yds, 50 Pair of fine Worsted Hose, and 175 Ells of Bag Holland, received from on board the Ship Good Success, Capt. Samuel Sharp, Commander, for Account of Lawrence Lucky, of London, Merchant, is Dr.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
To Portage of ditto— <i>l.</i> 00—17—06			
To Commission of Sales—13—01—11			
To Storage at $\frac{1}{2}$ per C.—06—10—11 $\frac{1}{2}$			
	20	10	4 $\frac{1}{2}$
To the Nett Produce carried to the Credit of Account bad Debts excepted—	241	6	4 $\frac{1}{2}$
	261	16	9
per Contra Cr.			
By 2765 brown Ozenbrigs, making 3456 Yds $\frac{1}{2}$ at 8d $\frac{1}{2}$ per Yd. sold <i>Amb. Baker.</i>	122	8	2
By 1112 Yds. of blue Linen, sold at 7d. $\frac{3}{4}$ per Yd.—	35	18	2
By James Smart, for 39 Yd. of Cloth, at 15s. per Yd.—	29	5	0
By Laurence Monk, for 50 pair of Hose at 7s. 10d. per pair—	19	11	8
By ditto for 175 Ells of Bag Holland, at 6s. 3d. per Ell—	54	13	9
	261	16	9
Errors excepted, May, 16th, 1779 per Charles Careful.			1

Business at the Waterside, concerning Exporting and Importing of Goods, &c. Entering them at the Custom-house, &c.

WHEN there are Goods to export, and ready packed, &c. there must be first made a Bill of Entry, as it is called, of the Contents, after this Form, viz.

R

In

In the Loyal Merchant, William Worm for Barbadoes.
Edward Export.

Three Cases of Haberdashery.

Five Tuns of Beer, &c.

Of these Bills there must be seven, one of which must be in Words at Length, and the other may be expressed in Figures: These are by the Clerk of the Custom-house entered into several Books for that Purpose. If some Goods pay Custom, and others not, then there must be made two Entries; one for those that pay Custom, and another for those that pay not; and likewise you must have two Cockets.

A *Cocket* testifies the Payment of all Duties; and is writ on a small Piece of Parchment in the following Words:

Know ye, that *Edwin Export*, Merchant, for three Cases of Haberdashery, and five Tuns of Beer, in the Loyal Merchant, William Worm, for Barbadoes, hath paid all Duties. *Dated 7th of September, 1779.*

On the Backside of the *Cocket* you must set down the Marks, Numbers, and Quantity of the Goods expressed in the Inside. When on clean Paper you transcribe your Bill of Entry, upon which a Shipping Bill will be made out, on the Back of which, signify the Marks, Number, and Contents as before on the *Cocket*: both which being thus endorsed, you are to deliver them to the Searcher at the Water side, who deposits them in the office till the going away of the Ship, and then they are delivered to the Captain or Master of the Ship.

If you have not Judgment or Experience enough to enter your Goods yourself, it is but applying to any one of the Clerks in the Long-room, who make it their Business (and good Business too) to enter People's Goods; and for a Shilling you giving them the Contents) they will write your Bills and pass your Entries, without giving you any farther Trouble, or your running any Risque of making any false Entries, &c.

Entry Inwards.

THE Ship being arrived, search the Entry-book in the Long-room, and you will find the Name of the Ship and Captain, as also the Waiters that are to attend the Delivery of the Ships and at what Key the Goods will be landed. The Entry Inwards runs thus:

In the Mercury, John Keelhaul, from Antigua.

25 Hhds. of Sugar, &c.

56 Bags of Cotton, &c.

There must be eight of these Bills, (though but seven Outwards) and one of these must be in Words at Length (as well as one of the seven Bills outwards) which is for the Warrant of Delivery and must be signed by the Person in whose Name the Goods were entered, and the Mark also in the Margin; which being done, and the Fee for Entry, and custom paid, you will then have from the Land Waiters a Warrant for the landing and receiving your Goods.

When Goods are to be exported by Certificate, viz. Foreign Goods formerly imported; these Goods being to be sent Abroad, or exported to another Place or Country by a Native of England within Twelve, or a Stranger within nine Month after Importation, entitles the Exporter to a Drawback of part of the Custom paid at the Importation of the said Goods producing a Certificate from the Comptroller, that they have paid the Duties inwards.) And the Debenture of Custom Drawback runs thus:

Debenture.

Christopher Commerce, Natural born, did, on, &c. make an Entry with us of Two Thousand Ells of broad *Germany* Linen in the *Amazon*, Captain *Stephen Stout*, for *Jamaica*, the Subsidy, &c. was paid inwards by, &c. as appears per Certificate of the Collector inward: And for farther Manifestation of his just Dealing therein, he hath also taken Oath before us of the same.

Custom-house, London, 16th May, 1779.

The Oath.

Jurat. C. C. That Two Thousand Ells of broad *Germany* Linen, above-mentioned, was really shipped out, and hath not been relanded in any Port or Creek in *England* or *Wales* since last shipped, *May, 2 1779.*

The Certificate Cocket.

London; Know ye, that C. C. for Two Thousand Ells of broad *Germany* Linen, paid per &c. the Day, &c. last. late unladen, and now in the *Amazon*, *Stephen Stout*, for *Jamaica* Dated the 16th of *May, 1779.*

This Certificate Cocket is gained by applying to the Books of the Importer, to know the Day, &c. when the Custom inwards was paid, and by whom; which carry to the Long-room in the *Custom-house*, and deliver it to the

Comptroller's Clerk of the Subsidy inward and outward, with an Account of what you would export, &c.

A little before was mentioned at what Key the Goods should be landed, and therefore here it is proper to name the Keys (or rather Quays) and Wharfs that Goods are usually landed at; which are these, *viz.*

Somer's Key,	Wool Key,
Smart's Key,	Galley Key
Wiggen's Key	Ralph's Key,
Bear Key,	Brewer's Key
Dice Key,	Chester's Key
Custom-house-Key,	Lyon's Key,
Potter's Key,	Cox's Key,
Hammond's Key,	Young's Key,

And Gaunt's Keys.

And the Wharf are Fresh Wharfs and Botolph Wharf.

Besides these, there are certain Places called *Docks*, which are Harbours cut into the Land, where there is no Current, but only a Flow and an ebb, occasioned by the Rise and Fall of the Tide in the *River Thames*; and these are convenient for the lying of Vessels, Hoys, Lighters, Barges, and Boats; and are these, *viz.*

Billingsgate Dock,	Wapping Dock,
Sabb's Dock,	Hermitage Dock,
Tower Dock,	Execution Dock, and
St. Catharine's Dock,	Limehouse Dock.

And above Bridge, Queenhithe Dock, Puddle Dock, White Friars Dock, and Scotland Yard Dock. And on Southwark or Surry Side, are Saviour's Dock, Clink Dock and Savery's Dock, below the Bridge Yard, and several others for private Uses. But more particularly eminent on that Side of the Water, is the Bridge Yard, for landing sundry Sorts of Merchandizes, but chiefly from the Ports of *England*.

Of Wharfage and Lighterage.

WHarfingers have several Managers over them, and also a Committee to redress Grievances, &c. and Clerks of the Stations, with Lighters Managers, and have the letting of many Warehouses (which are very fine and commodious being rebuilt since the sad Fire in *Thames-street*) Cellars &c. and have the Privilege of keeping Lighters for the Carriage of Goods to and from.

The Rates of Wharfage,

Are generally computed at 12*d.* per Ton, whether outward or inward; excepting Sugar from the *West-Indies* which pay 2*s.* per Ton, 4 Hogsheads being accounted a Ton (tho' they weigh more.) Crainage is included in the 12*d.* for 4 Hogsheads of Sugar that come from the *West-Indies*; and for Wine and other Goods the Lighterage is half as much as the wharfage.

Husbands of Ships.

WHERE several Persons are concerned in a Ship, there is usually a Husband chosen by them, to take an Account of every Merchants Goods, &c. and pay the Wharfage, Lighterage, Porterage, &c. and these Husbands are to collect every Merchant's Proportion, when they do the Owner's Freight.

Of MENSURATION of PLANES and SOLIDS.

THE several Kind of Measuring are Three, *viz.*

1*st.* *Lineal*, by some called Running Measure, and is taken by a Time, and respects Length without Breadth: the Parts of which are.

12 Inches 1 Foot, 3 Feet one Yard, 16 Feet and a half 1 Rod, Pole, or Perch.

All kinds of ornamental Works such as Cornice, Freeze, &c. are measured by Running Measure.

2*dly.* *Superficial* or square Measure, is that which respects Length and Breadth; and the Parts are.

144 Inches, 1 Foot, 72 Inches half a Foot, 36 Inches one Quarter of a Foot, 18 Inches half a Quarter of a Foot, 272 Feet and a Quarter 1 Rod, 136 Feet half a Rod; 1296 Inches or 9 Feet, one superficial or square Yard.

3*dly.* *Solid*, or Cube Measure, which respects Length, Breadth, and Depth, or Thickness, and the Parts are,

1728 Inches 1 Foot, 1296 Inches three Quarters of a Foot, 864 Inches half a Foot, 432 Inches one Quarter of a Foot; and 27 Feet one solid Yard.

Superficial Measure.

TO measure Things that have Length and Breadth, such as Board, Glass, Pavement, Wainscot, and Land is to take the Dimensions of the Length and Breadth, according to the customary Methods used in each particular; for instance Board and Glass are measured by the Foot, the Dimensions are taken in Feet and Inches, and the Content

given in Feet.

The Dimensions in Wainscoting and Paving, Plastering and Painting, are taken in Feet and Inches, and the Content given in Yards.

Of the Square and superficial Content or Area.

The Squaring of any Number is multiplying it into itself; as 12 Inches multiplied by 12 Inches make 144 square Inches. The superficial Content or Area of any Thing is found four several Ways, *viz.* by whole Numbers, by Decimals, by Practice, and by Cross Multiplication; in each of which Methods I shall give Examples of Operation.

A Square hath its Sides perpendicular and equal.

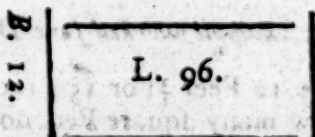
An oblong hath its Sides perpendicular, and those that are opposite equal; but the adjacent Sides are unequal: Boards, Wainscots, Ceilings, Windows, Doors, &c. are commonly of this Figure.

When any thing is to be measured, it must be considered what Form or Fashion it is of; and then it must be measured according to the several Rules for each Figure.

First, If it be a Square or Oblong, then the Length and Breadth must be multiplied one by the other, which gives the Content in square Measure, and that Product must be divided by its proper Divisor according to the Name in which the Content or Area is to be given.

Example.

Admit a Board be 12 Inches broad, and 8 Feet or 96 Inches long how many square, or superficial Feet doth it contain?



$$\begin{array}{r} 144 \overline{) 1152} \quad (8 \text{ Feet.}) \\ \underline{1152} \end{array}$$

(0)

Here the Length in Inches is multiplied by the Breadth Inches long, and the Product 1152 divided by 144, the square Inches in a Foot, quotes 8 Feet square for the Content of the Board.

A Rule for Dispatch.

If the Length of a Board, or Piece of Glass, be given in Feet, and the Breadth in Inches multiply one by the other, (without any Reduction) and divide the Product by 12: and the Quotient will be the Answer in Feet, and the Remainder will be Parts of a Foot. So the foregoing Example might have been done sooner by dividing 96 the Length by 12 the Breadth, and it quotes 8 Feet for the Content, by the former way.

Example.

Suppose a Board by 14 Inches long, and 15 Inches broad what is the Content in square Feet?

14 Feet long.
15 Inches broad.

12) 210

Feet 17 $\frac{6}{11}$ or $\frac{2}{3}$

Or consider thus:

14
by 1—3

14

3 In. $\frac{1}{2}$ 3 $\frac{2}{3}$

Ans^r. 17 $\frac{2}{3}$

So the Answer is 17 Feet and $\frac{2}{3}$. And so for any other Example of this Kind.

Here 3 Inches is the $\frac{1}{4}$ of a Foot, wherefore $\frac{1}{4}$ of 14 is taken, and added to 14, and it makes 17 Feet, and $\frac{2}{3}$ equal to $\frac{2}{3}$.

Another Example worked four Different Ways.

If a Board be 12 Feet $\frac{1}{2}$, or 150 Inches long, and 15 Inches broad, how many square Feet doth it contain?

VULGARLY.

Inches

150 long

15 broad,

(0) 750

150

2250

DECIMALLY.

12,5

1,5

625

250

250

Feet, 15,625

$$\begin{array}{r}
 144) 2250 (15 \text{ Feet} \\
 \underline{144} \\
 810 \\
 \underline{720} \\
 90
 \end{array}
 \qquad
 \begin{array}{r}
 \text{Feet } 15, 625 \\
 \underline{12} \\
 \text{Inches } 7, 500 \\
 \underline{4} \\
 \text{Quarters } 2, 000
 \end{array}$$

Rem. 90.
Multiply by 12 Inch. 1 Foot

$$\begin{array}{r}
 144) 1080 (7 \text{ Inches} \\
 \underline{1008} \\
 72
 \end{array}$$

Rem. 72
Multiply by 4 the Quarters in an Inch.

$$\begin{array}{r}
 144) 288 (2 \text{ Quarters or } \frac{1}{2} \\
 \underline{288} \\
 0
 \end{array}$$

By Cross Multiplication.

$$\begin{array}{r}
 \text{Feet.} \quad \text{In.} \\
 12 \text{ --- } 6 \\
 1 \text{ --- } 3 \\
 \hline
 12 \text{ --- } 6 \\
 0 \text{ --- } 6 \\
 3 \text{ --- } 0 \\
 0 \text{ --- } 0\frac{1}{2} \\
 \hline
 \end{array}$$

By Practice.

$$\begin{array}{r}
 \text{Feet.} \quad \text{In.} \\
 12 \text{ --- } 6 \\
 \hline
 1 \text{ --- } 4 \\
 \hline
 12 \text{ --- } 6 \\
 3 \text{ Inches } \frac{1}{2} \quad 3 \text{ --- } 1\frac{1}{2} \\
 \hline
 15 \text{ --- } 7\frac{1}{2}
 \end{array}$$

Ans. 15 --- 7 $\frac{1}{2}$

The four Methods here used are as follow: First, by multiplying the Inches together, and dividing by 144, &c. The second Work is performed decimally; the third Method is by Cross-Multiplication; and the last and best is by Practice.

Any of these Methods may be easily understood by the Use of the arithmetical Part of this Book, except the Method by Cross-Multiplication: which I shall explain here.

In the Example, 1 Foot 3 stands under 12 Feet 6; and having drawn a Line, say once 12 is 12, then I say cross way 6 times 1 is 6 Inches; so that Line is 0 Feet 6 Inches. Then crossway again, I say 3 times 12 is 36 Inches; the 12's in 36 is 3 times, or 3 Feet; so that Line is 3 Feet 0 Inches: Lastly, I multiply the Inches together, saying, 3 times 6 is

18, the 12's in 18 once, and there remains 6, or $\frac{6}{12}$ equal $\frac{1}{2}$, as in the Work.

If a Board be wider at one end than the other, then take the Breadth in the Middle, or add the Measure of both Ends together, and take Half of the main Breadth, which multiply by the Length.

Example.

Suppose a Board to be 120 Inches long, and the narrowest End 10 Inches wide, the broadest End 34 Inches wide; what is its Content in superficial Feet?

Add } 34 broadest End
10 narrowest

Sum 44
its half 22
is 22 the Medium
120 the Length

144)2640(18 Feet $\frac{1}{2}$ Ans.

144
1200
1152

Rem. 48 | 4—1

or 4 Inches; that is 48 the Remainder
144 | 12—3 is $\frac{1}{2}$ of 144.

Or thus:

Feet. Inches.

10—00 the Length.

1—10 the main Breadth

For 10 Inches } 6 $\frac{1}{2}$ 5—00
4 $\frac{1}{2}$ 3—00

Ans. 18—00

If

If a Board or Piece of Glass be over so irregular, it may be measured very near, by taking the Breadth in 5 or 6 Places, and add the several Breadths together, dividing the Total by the Number of Places, and the Quotient will be the mean Breadth; which multiply by the Length, &c.

Having the Breadth in Inches of any Board, or Piece of Glass to know how much the Length of that Board or Piece of Glass will make a Foot superficial.

Rule. Divide 144 by the Inches in Breadth, and the Quotient will be the Length of that Board that will make a Foot.

Example.

If a Board be 9 Inches broad, what Length of that Board will make a superficial Foot?

$$9 \overline{) 144}$$

Ans. 16

Proper Dimensions for Joiners, Painters, Glaziers, &c.

Rooms being various in their Forms, take this general Rule in all Cases *viz.*

Take a Line, and apply one end of it to any Corner of of the Room; then measure the Room, going into every Corner with the Line, till you come to the Place where you first began; then see how many Feet and Inches the String contains and set it down for the Compass or Round; then take the Height by the same Method.

Glaziers are to take the Depth and Breadth of their Work, and multiply one by the other, dividing by 144; Glass being measured as Board.

Having thus shewn the Method of Casting up Dimensions I come now to Particulars; the first of

Glaziers Work by the Foot.

If the Windows be square, multiply the Length by the Breadth, which will produce the Content, as abovesaid.

Example.

Example.

By Cross Multiplication.

Feet. In.

8—9 high

7—3 broad

56—0

2—0

5—3

2 $\frac{1}{4}$

63—5 $\frac{1}{4}$

By Practice.

Feet. In.

8—9

7 Feet 3

61—3

3 Inches $\frac{1}{2}$ 2—2 $\frac{1}{4}$

63—5 $\frac{1}{4}$ *Ans^w.*

If the Windows are arched, or have a curved Form, an Allowance is made, by reason of the extraordinary Trouble and Waste of Time, Expence, or Waste of Glass, &c. And the Dimensions taken from the highest part of the Arch, down to the Bottom of the Window, from the Height or Length; which multiply by the Breadth, and the product will be the Answer in Feet, &c.

Glaziers are often so very nice, as to take their Dimensions, and to measure to a Quarter of an Inch.

Example.

Feet. In.

4—3 $\frac{1}{2}$ long.

2—7 $\frac{3}{4}$ broad.

8—7

2—1 $\frac{3}{4}$

6 $\frac{1}{4}$ $\frac{3}{4}$

1 $\frac{1}{4}$

11—4 $\frac{1}{2}$

6 Inches is $\frac{1}{2}$

1 $\frac{1}{2}$ is $\frac{3}{4}$

$\frac{1}{4}$ is $\frac{1}{8}$

Glass is measured by the Foot, as was said before; and the price of Work is as follows, viz.

English Glass per Foot	0—5
French and Crown Glass	1—0
Common Work, Leading included, for every Foot square,	1—6
New Leading old Glass per Foot	
Common Diamond Squares, each	0—1

Painter.

Painters Work by the Yard.

WHEN the Wainscot of a Room is painted, you are to measure round the Room with a Line, as hinted before, and the Height is to be taken by girting a String over all the Mouldings from the Top of the Cornice to the Floor; then multiply the Compass by the Height, and you have the Content in Feet and Inches; which may be reduced into square Yards by dividing by 9.

Example 1.

A Room painted,

Feet. In.

Being 45—8 in Compass }
10 F. 6 high. }

What is the Content
in square Yards?

456—8
22—10

9) 479—6

Yards 53—3 $\frac{2}{3}$ *Answer.*
Example 2.

Feet. In.

48—11 Compass
12 Foot 4 high

Note, Double Work is allowed in Window Shutters; Sash Frames and Mantle-pieces are reckoned by themselves, unless the Mantle-pieces stand in the Wainscot, and then they are to be measured as plain Work, deducting nothing for the Vacancy.

In. 1019—00

4 $\frac{1}{3}$ 28—03 $\frac{2}{3}$

9) 1047—03 $\frac{2}{3}$

Yards 116—03 $\frac{2}{3}$
Prices.

Common coloured, 3 Coats in Oil, per Yard	---	0---6
On old Colour	_____	0—4
Walnut-tree Colour	_____	1—0
		Marble

Marble Colour, from 16d. to	—	—	—	—	—	2—3
Sash Frames, each	—	—	—	—	—	1—0
Sash Lights, each	—	—	—	—	—	0—1
Window Lights, one with another	—	—	—	—	—	0—3
Iron Casements	—	—	—	—	—	6—0

Joiners Work.

WAINSCOTTING, the Dimensions are taken as in Painting, viz. by measuring the Height (indenting the String wherever the Plane goes, as well as the Painters do wherever the Brush goes) and then the Compass; which multiply one into the other, dividing the Product by 9, and the Quotient is the Answer in square Yards.

Example.

What is the Content of a Piece of Wainscoting that is 9 Feet 3 long, and 6 Feet 6 broad?

Feet. In.

9 — 3
6 F. 6.

55 — 6
6 Inch. $\frac{1}{2}$ 4 — 7 $\frac{1}{2}$

9) 60 — 1 $\frac{1}{2}$ (6 Yds. $\frac{2}{3}$ Answer.

54

6

By cross Multiplication, thus :

Feet. In.

9 — 3
6 — 6

54 — 0

4 — 6

1 — 6

1 $\frac{1}{2}$

60 — 1 $\frac{1}{2}$ as before, which divide by 9, &c.

Once more.

There is a Room wainscotted, the Compass of which is 47 Feet 3 Inches, and the Height 7 Feet 6 Inches: what is the Content in Yards square? *Answer* 39 Yards $\frac{1}{4}$.

Feet. In.

47 --- 3 Compass
7 --- 6 the Height

6 In. $\frac{1}{2}$ 330 --- 9
23 --- $7\frac{1}{2}$

9) 354 --- $4\frac{1}{2}$

Ans. 39 Yds. $\frac{3}{8}$ or $\frac{1}{2}$

The Prices per Yard.

	<i>s.</i>	<i>d.</i>
For good Wainscot.	—	6—0
Wainscoting, not finding Stuff, &c.	—	2—0
Coarse Wainscoting.	—	1—0
Deal Wainscot, finding Stuff.	—	3—0
Not finding Stuff,	—	1—6

Carpenters Work.

ROOFING, Flooring, and Partitioning the principal Carpentry in modern Buildings, are measured by the Square of 10 Feet each Way, that is 100 square Feet.

For Roofing, multiply the Depth and half Depth by the Front; or the Front and half Front by the Depth, and you will have the Contents.

The Dimensions are taken in Feet and Inches.

Example.

How many Squares doth that piece of Work contain that measures 199 Feet in Length, and 10 Feet 7 Inches in Height? *Answer* 21 Squares 14 Feet $10\frac{1}{2}$.

Operation.

Feet In.

199---10 long
10 F. 7 high

The Division is performed by pointing off two places towards the Right-hand, and the Number on the left are Squares, &c.

1998---4
6 $\frac{1}{2}$ 99---11
1 $\frac{1}{2}$ 16--- $7\frac{1}{2}$

21, 14--- $10\frac{1}{2}$ *Ans.* 21 Squares, 14 F. 10 In. $\frac{1}{2}$.

Again;

Again,

If a Floor be 49 Feet 7 Inches 4 parts long, and 26 Feet 6 Inches broad, how many square Feet?

The Operation by cross Multiplication.

Feet.	In.	Parts.
49	7	4
26	6	0
<hr/>		
291	0	0
98	0	0
15	2	0
24	6	0
	3	6
	8	8
	0	2

13. 14 — 8 — 4 *Ans.* 13 Sq. 14. F. 8 In. 4 Pts.

Note, In measuring Roofing, no Deduction is made for Sky Lights, Chimney Shafts, &c.

In measuring Flooring, from the Content of the whole Floor in Feet, take the Content of the Vacancy for the Stairs, Hearths, &c. in Feet, and the Remainder is the true Content, which bring into Squares as before.

Note, In Partitioning you must measure the Doors, Door-cases, and Windows by themselves, and deduct their Content out of the Whole, except by Agreement they are included; and then you must mention in the written Agreement, Doors, Door-cases, and Windows included.

There are divers Sorts of Carpenters Work belonging to a Building, viz. Cantaliver Cornice, Modillion Cornice, Plain Cornice, Guttering, Rail and Ballusters, Lintale, Penthouse, Cornice, Timber-front, Story, Brest-sommers, Shelving, Dressing, &c. all which are measured by Lineal or Running-measure. There are also Doors and Door-cases, Lanthorn Lights with their Ornaments, Balcony-doors and cases, Cellar-doors and Curbs, Column and Pilasters, Cupolas, &c. all which are valued by the piece.

Carpenters Work is done at the following Prices.

		l.	s.	d.
Flooring, finding Boards, the Square	--	1	15	0
Not finding Boards, from 2s. 6d. to	--	0	06	0
	S 2			Roofing

		<i>l.</i>	<i>s.</i>	<i>d.</i>
Roofing with Oak	_____	2	00	0
Not finding Timber	_____	0	12	0
Partitioning per Square	_____	0	15	0
Not finding Timber	_____	0	17	6
Stairs with Rails and Balusters complete		1	10	0
Sawing of Oak and Elm per 100 Feet	_____	0	01	6
Fences for Trees	_____	0	02	6

Old Timber is commonly sold for 40s. per Ton (that is 40 solid Feet in the piece : Ash 30s. and Elm 28s. per Ton,

Note, *Carpenters measure the Timber Frames of any Building (which they call the Carcase) by the Square of 10 superficial Measure, or 100 square Feet, as hinted before.*

Sawyers Work.

IN this place it may not be improper to say something in relation to the Method used by *Sawyers* in measuring their Work. When they work by the Great (as they say) most commonly measure their Work by the superficial Foot; so there is no great Difficulty in taking the Dimensions; for they account the Depth of the Kerf for the Breadth, and the Length for the Length. The Dimensions being thus taken in Feet, the Content of one Kerf superficial may be found by multiplying the Length by the Breadth; and then having found the Number of Feet in one Kerf, multiply it by the Number of Kerf of the same Dimensions, and you will have the Number of Feet in them all.

Note, 1st. When thus they have cast up the whole Content of their Work in Feet, they are paid for it by the Hundred, that is, 100 Feet.

2^{dly}, That if the Kerf be but 6 Inches or less in Depth, then they have a Custom to be paid for Kerf and Half, (as they express it) *i. e.* for half so much more as it comes to by Measure; and the Reason they give for it is, that the Trouble is so much the more on account of often *shifting* or removing and new binding their Timber, and therefore they insist on it as a customary price.

3^{dly}, For breaking Work, that is, for cutting a piece of Timber or Tree through the Middle, and slabbing it,
i. e.

i. e. cutting off the outside pieces, if the Kerf be more than 12 or 13 Inches deep, they are paid by the Foot Lineal or Running Measure, at different Prices, according to the various Depths of the Kerf, and are as follows.

<i>Inches deep.</i>	<i>d. qrs.</i>	
15	1	} <i>per Foot.</i>
18	1 1	
20	2	
22	2 2	
24	3	
26	3 2	
28	4	
30	4 2	
32	5	
34	5 2	
36	6	

4thly, In some Places it is customary to allow the Sawyer but one breaking Kerf in a Tree, though there be never so many Kerfs deep in it. But some Sawyers claim to have half breaking-work, and half hundred-work; that is, if they have four Kerfs deep, then they will have two breaking work, and the other two, hundred-work.

5thly, In sawing Bevil-work, as Hips, Sleepers, &c. Posts, &c. in Bevil Frames, Posts or Puncheons in Polygonal Turrets, &c. also Cantrails, &c. for these they work by the Hundred, but always reckon Kerf and Half for such sort of Work; that is, they reckon half as many more Feet of Work than there is really performed.

Bricklayers and Tylers Work.

Of Walling.

WALLING is measured by the Rod Statute-measure, being 27 1/2 Feet and 1/4 superficial. The Method of taking their Dimensions is thus: for a Wall round an Orchard or the like, they measure the Length by a Line going over the Buttresses: and for the Height they measure over the Mouldings (pressing the Line into them) even to the Middle of the Coping: they likewise take Notice of the Thickness of the Wall, that is, how many half Bricks in Length the Wall is in Thickness; for three half Bricks, that is a Brick in Length, and one in Breadth, is Standard Thickness; and all Walls, whether less or more, must be

reduced to that Thickness, *viz.* Multiply the Product of the Length and Height, by the Number of half Bricks that the Wall is in Thickness; which Product divide by 3, and then the Quotient by 272 (the $\frac{1}{2}$ being generally neglected in Vulgar Working) and the Quotient will be Rods, at a Brick and a half thick Standard-measure.

Example.

Admit the Face of the Wall measure 4085 Feet, and the Thickness be two Bricks and a half, or 5 half Bricks thick, how many Rods doth it contain?

$$\begin{array}{r}
 4085 \\
 \underline{5} \\
 3) 20425 \\
 \underline{0} \\
 272) 6808, 25 \text{ Rods, Answer.} \\
 \underline{0}1368 \\
 (8)
 \end{array}$$

When the Work is wrought decimally, then you divide by $272\frac{1}{2}$, or 272,25, which gives the Quotient somewhat less. But the measuring of Brick Work may be shortened by having the Rod of 16 Feet $\frac{1}{2}$ centesimally divided into 100 equal parts, with which you take the Dimensions, and the Length of the Wall in those Rods; and 100 parts multiplied by the Height, give the Content in Rods, of any Wall that is a Brick and a half thick. Deduction must be made for Doors, Windows, &c.

A Table to reduce Brick Work to Standard-measure, *i. e.* a Brick and half thick.

Brick.

1		Subtract $\frac{1}{3}$	}	Reduces to a Brick and $\frac{1}{2}$.
2		Add $\frac{2}{3}$		
3	}	Multiply by	{ 2 3 4 }	
4 $\frac{3}{4}$				
5				

Example.

Suppose a Garden Wall to be 254 Feet round, and 12 Feet 7 Inches high, and three Bricks thick; how many Rods doth it contain?

In

$$\begin{array}{r}
 254 \\
 12 \\
 \hline
 \text{In } 6\frac{1}{2} \\
 1\frac{1}{2} \\
 3048 \\
 127 \\
 21--2 \\
 \hline
 3196--2 \\
 \hline
 272) 6392--4 \quad (23\frac{1}{2}
 \end{array}$$

In this Operation, the Aggregate, or Total, is multiplied by 2, because twice 3 is 6, the Number of half Bricks; and that reduces the Work to Standard Measure, as by the foregoing Table.

Of Chimnies.

The Brickwork is commonly agreed for by the Hearth, and also sometimes by the Rod; and the Method of taking Dimensions is thus; if the Chimney stands singly, not leaning against, or being in a Wall, and worked upright over the Mantle-tree to the next Floor, it is girt about the Breast for the Length, and the Height of the Story is taken for the Breadth, and the Thickness of the Jaumbs for the Thickness. But if the Chimney stands against, or in a Wall, which is before measured with the rest of the Building, then the Breadth or Breast or Front. together with the Depth of the two Jaumbs, is the Length; the Height of the Story the Breadth, and the Thickness of the Jaumbs the Thickness. But if the Chimney stands in the Corner of a Room, and has no Jaumbs, then the Breadth of the Breast is the Breadth, the Height of the Story the Length, and the Thickness the Thickness. And for the Shaft, it is commonly girt in the smallest part for the Length; and the Thickness of both Sides, for the Thickness; in Consideration of the Widths, Pargetting, Scaffolding, &c.

Note, *There is nothing to be deducted for the Vacancy between the Hearth and the Mantle-tree, because of the Widths and the Thickening for the next Hearth above.*

Gable-Ends.

Take half the Perpendicular for the Breadth, and the Width of the House for the Length, or half the Width of the House for the Breadth, and the Perpendicular for the Length, which brings the Measure to an Oblong, the Content of which is found by multiplying the Length, by the Breadth, &c.

Note,

Note, *There are several other Things in Bricklayers Work, as Cornice, Facias, Straight Arches, Chime Arches, Hips and Valleys in Tiling, and Water-Courses: All which are measured by the Foot Lineal or Running Measure. Also Peers, Pilasters, Rustic Work, &c. which are valued by the Piece.*

<i>Prices.</i>		<i>l.</i>	<i>s.</i>	<i>d.</i>	
For Walls, finding Materials	—	5	00	0	per Rod.
Not finding Materials	—	1	10	0	ditto.
For Tiling, finding Materials	—	1	05	0	per Squ.
Not finding Materials	—	0	05	0	ditto.
For Tiling, finding Materials, except Tiles	—	0	10	0	per Rod.
For stripping without taking down	—	0	05	6	ditto.
With taking down	—	0	07	0	ditto.
For Pointing	—	0	02	0	ditto.

Paving.

Pavements for Cellars, Wash-houses, &c. is measured by the Square-yard.

Example.

If a Cellar, Wash-house, or Court-yard be paved with Bricks, or pitched with Pebble, being 9 Yards 2 Feet long, and 6 Yards 2 Feet broad; how many Yards square doth it contain? *Answer*, 64 Yards 1 and $\frac{1}{3}$ Feet, as by the following Work.

<i>Yds.</i>	<i>F.</i>	<i>Yds.</i>	<i>F.</i>
9	2	9	2
6	2	6	2
<hr/>		<hr/>	
54	0	58	0
6	0	3	0
4	0	3	0
	$1\frac{1}{3}$	<hr/>	
64	$1\frac{1}{3}$ <i>Ans.</i>	64	$1\frac{1}{3}$

Pro.


29
20
<hr/>
9) 580
<hr/>
Yds 64 $\frac{1}{3}$

Here the Answer is found by three different Operations, and the Result of each is the same.

Slatting

Slating,

Is valued by the Square of 100 Feet; in some places by the Rod of 18 Feet square; that is 36 square Yards, or 324 Feet.

 In Tiling and Slating, where there are Gutters and Valleys, there is commonly an Allowance, which is to take the Length of the Roof all along the Ridge, which makes the Gutter double Measure; which in some places is allowed, in others not. Sometimes there is an Addition for hollow Ware, that is, Ridge-Tiles, Gutter-Tiles, Corner and Dormer-Tiles; and here Customs differ: For in some places they account one superficial Foot for every Foot lineal or running Measure; then 100 Feet lineal is reckoned a Square. In other places, for every 100 of such Tiles they reckon one Square.

Plastering,

Is of two Kinds, *viz.* *First*, Work lathed and plastered, sometimes called Cieling. *Secondly*, plastering upon Brick-work, or between the Quarters in partitioning, by some called Rendering; both which are measured by the Yard square, as the Joiners and Painters do. In taking Dimensions of Cieling, if the Room be wainscotted, they consider how far the Cornice bears into the Room, by putting up a Stick perpendicular to the Cieling, close to the Edge of the uppermost part of the Cornice; and measure the Distance from the perpendicular Stick to the Wainscot; twice which Distance must be deducted from the Length and Breadth of the Room taken upon the Floor, and the Remainder is the true Length and Breadth of the Cieling: As suppose a Floor is 24 Feet long, and 18 Feet broad; and the Cornice shoots out 6 Inches; deduct a Foot for both Ends, and the Length of the Cieling is 23 Feet; and the same for the Breadth; it leaves 17 Feet broad; which multiplied together, gives the Content, 391 Feet; or 43 Yards a half.

Example

Example.

23 Feet the Length.
17 Feet broad.

$$\begin{array}{r} 161 \\ 23 \end{array}$$

$$\begin{array}{r} 9) 391 \text{ (43 Yards, 4 Feet.)} \\ 36 \end{array}$$

$$\begin{array}{r} 31 \\ 27 \end{array}$$

$$\begin{array}{r} 4 \end{array}$$

If the Ceiling of a Room be 19 Feet to one Way, and 17 Feet 6 the other, how many square Yards does it contain?

By Cross Multiplication, thus :

$$\begin{array}{r} 19 : 10 \\ 17 : 6 \end{array}$$

$$133$$

$$19$$

$$14 : 2$$

$$9 : 6$$

$$5$$

$$9) 347 : (38 \text{ Yds. } 5 \text{ F. In.}$$

How many Yards square are there in a Piece of Plastering that is 47 Feet 4 Inches 7 Parts long, and 18 Feet broad?

F. In. Pts.

$$47 \text{ — } 4 \text{ — } 7$$

3 times 6 is 18

$$\begin{array}{r} 142 \text{ — } 1 \text{ — } 7 \\ 6 \end{array}$$

$$9) 852 \text{ — } 10 \text{ — } 6 \text{ (94 Yds. 6 Feet 10 Inches, 6 Parts.)}$$

Prices

Prices per Yard. s. d.

For every Yard of common Plastering, finding	}	0--9
Laths, Nails, &c.	---	---
Not finding Laths	--	0--4 $\frac{1}{2}$
For White-washing with Size	----	1--1 $\frac{1}{2}$
Partitioning, finding all Materials	---	0--3

Masons Work.

THE Masons Work, consisting of Stone, is of two Sorts, *viz.* Superficial and Solid. Pavments and the Face of Stone Wall, Houses, &c. are measured as Brick-work. If the Work have Ornaments, as Capitals, Pilasters, Rails, and Ballusters, &c. then they are valued by the Piece.

For every Foot plain Work in Walls, &c.	---	0--8
For plain Cornice, about	---	1--5
For rough Stone Wall, with Lime, 16 Feet $\frac{1}{2}$ } long and 1 Foot high, per Rod	--	1--2
Without Lime, per Rod	---	0--3
Paving, digging the Stone, and all Workman- } ship, per square Foot	---	0--3

Prices of Stones and Urns.

Rough Paving 1d. per Foot : Rough Asher or Copping, 1d. $\frac{1}{2}$ per Foot : fine Asher 3d. per Foot : Base 1d. per Foot : Carbe 6d. per Foot : Urns 3 Feet high, 1l. 4 Feet high, 1l. 10s. 5 Feet, 2l. and 6 Feet high, 3l.

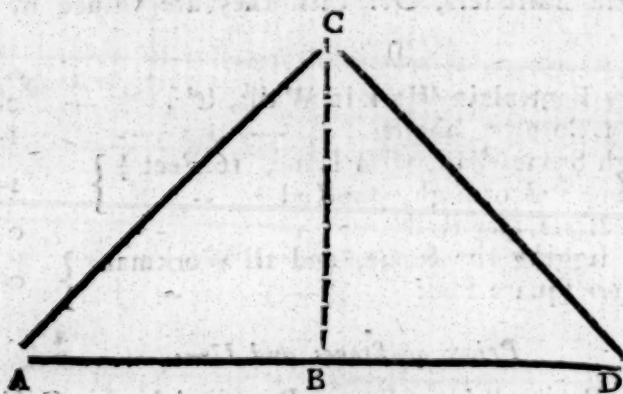
Land Measure.

LAND is usually measured by the Acre. The Dimensions are taken with a Chain of 4 Poles in Length, which is divided into 100 parts, called *Links*, and 10 square Chains make an Acre. Let them be 10 in Length, and 1 in Breadth, or 5 in Length and 2 in Breadth, &c. or 160 square Poles; but to find its Content (if not regularly square) it is generally divided into Triangles: Thus a piece of Land of 4 Sides (if not square) may be divided into two Triangles, pieces of 5 Sides in 3, and a 6-sided piece into 4 Triangles.

To

To measure a Triangle.

Admit the longest Side of the following Triangle, *viz.* A D to be 76 Poles; and the perpendicular or dotted Line B C to be 30 Poles; multiply 76 (the Base) by 15, the Perpendicular B C, and it produces 1140: Or if you multiply the whole Perpendicular by half the Base (or longest Side) it will produce the same; which divided by 160, (the square Poles in an Acre) the Quotient gives the Content of that Piece of Land in Acres; and what remains multiply by 4, and divide by the same Divisor, and it quotes Roods, &c.

*The Operation.*

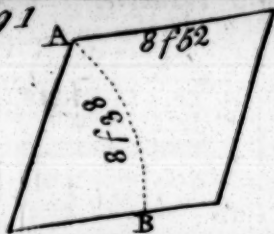
76 The Base
15 Half the Perpendicular.

$$\begin{array}{r} 16 \overline{) 1140} \quad 114 \overline{) 1140} \quad 7 \text{ Acres } \frac{2}{8} \frac{1}{4} \\ \underline{1120} \\ 20 \end{array}$$

.
d
5,
u
or
y
e
e-
d

Place this at the beginning of Measuring

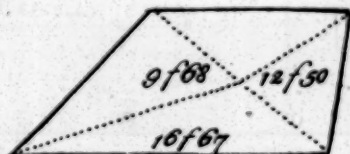
Fig 1



2

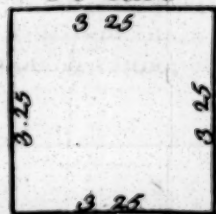


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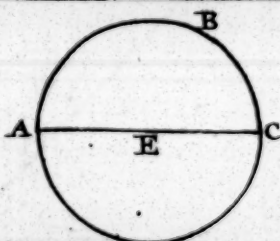


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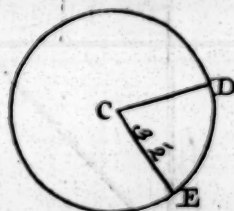
A Cube



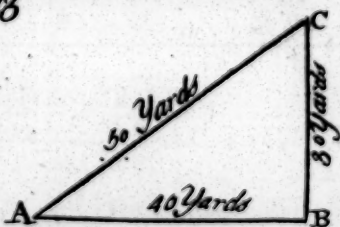
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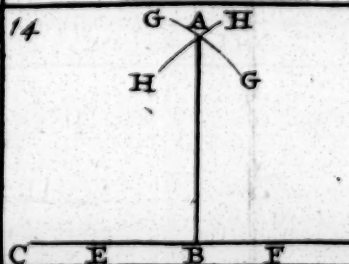
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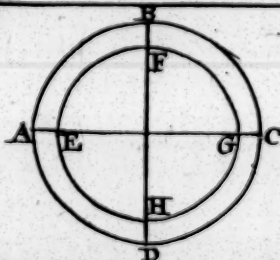
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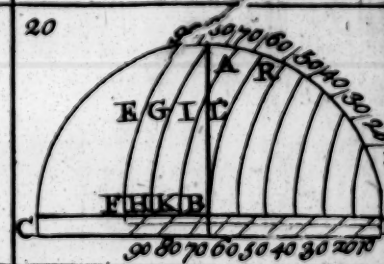
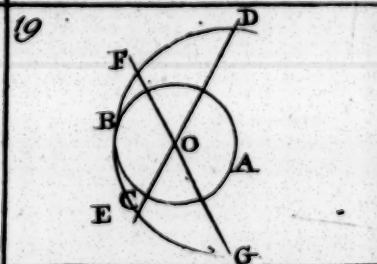
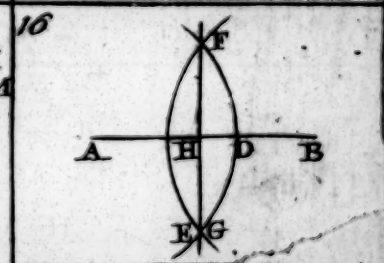
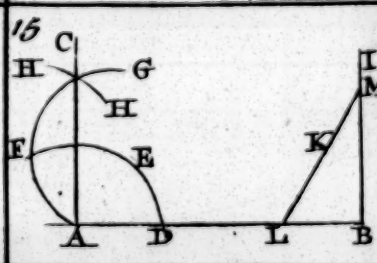
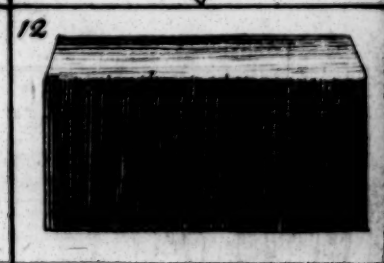
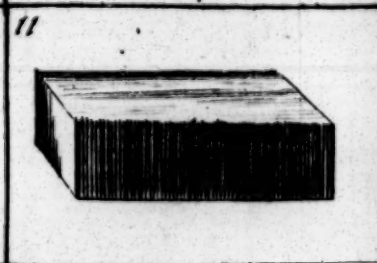
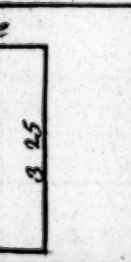
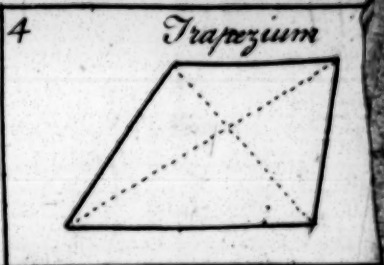
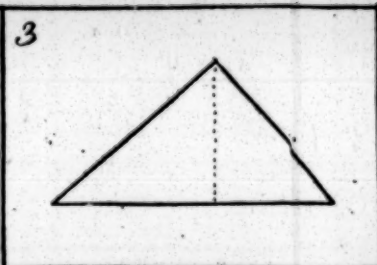


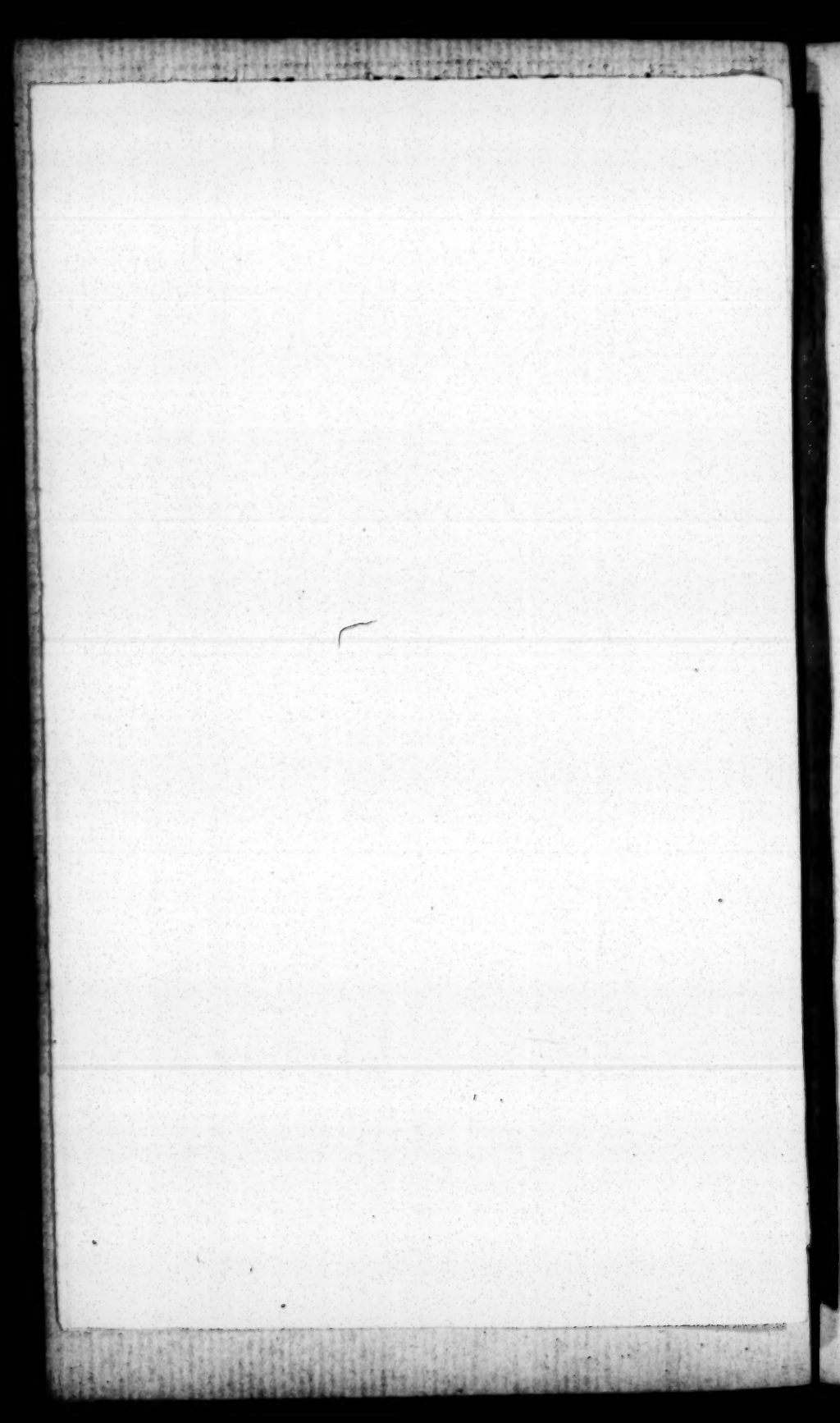
17



18







All other Pieces of Land (for the most part must be divided into Triangles, and when measured, their Contents added together.

Suppose an oblong Plat of Ground contains 35 Poles broad, and 185 Poles long; how many Acres is the Content.

Rule.

Multiply the Length in Poles by the Breadth, and divide the Product by 160 (the square Poles in an Acre) and the Quotient will be the Answer in Acres; and if the Remainder

Be $\left\{ \begin{array}{c} 120 \\ 80 \\ 40 \end{array} \right\}$ its Value is $\left\{ \begin{array}{c} \frac{3}{4} \\ \frac{1}{2} \\ \frac{1}{4} \end{array} \right\}$ of an Acre.

The Work.

185 the Length
35 the Breadth.

925
555

160) 6475 (40 Acres.
640

The Content is 40 Acres,
 $\frac{1}{4}$ and 35 Poles; are almost
40 Acres and a half.

75
deduct 40 a Quarter

35 Poles remain.

By the Four Pole Chain.

Example. There is a Plat of Ground that contains 16 Chains and 25 Links in Breadth, and 57 Chains and 30 Links in Length; what is the Content of that Piece of Land?



Example.

C Link.

57,30 Length.

16,25 Breadth.

28650

11460

34380

5730

Acres 93|11250 cut off five Places

4

No Roods 45000

40

Poles 18|00000(93 A. o R. 18 P

Note, 4 Roods or Rods 1 Acre, 40 Poles 1 Rood or Rod, so that one Rood or Rod is a Quarter of an Acre.

Note also, That the above Chain, commonly called *Gunter's Chain*, contains 4 Statute Poles in 100 Links, so that any Number of Chains are no more than so many 100 Links as 4 Chains are 400 Links, and 6 Chains 600 Links, &c. 160 Statute Poles are an Acre each Pole being 16 Feet and a half; therefore, in a square Chain there are 16 square Poles; and if you divide 60 (the square Poles in an Acre) by 16 the square Poles in a Chain, the Quotient is 10, the square Chains in an Acre.

A square Chain contains 10,000 square Links (or 100 multiplied by 120) and therefore it follows, that an Acre contains 100,000 square Links.

To reduce Statute to Customary Measure.

According to a Statute made in the 33d of *Edward* the 1st. and in another in the 25th of *Queen Elizabeth* a Statute Pole is 16 Feet and a half long, (as said before) but in divers Parts of *England* there are used Poles of 18 others of 21 and some of 24 Feet long, called Customary Measure, being in Use according to the Humour or Custom of the place where they are taken, To turn therefore one Sort of Measure into the other, admit Statute Measure to be turned into Customary, do thus: Multiply the Number of Acres, Roods, and Poles, Statute Measure; by the square half Yards, or square half Feet in a square pole of Statute Measure, and divide the Product by the square half Yards, or square

square half Feet contained in the Pole of the Measure Customary, and the Quotient gives the Answer in the latter, in Acres, Roods, &c.

Example. In 172 Acres Statute Measure how many Acres of 18 Feet to the Pole or Perch?

172 Statue Measure.
121 Square half Yard.

144) 20812 (144 Acres $\frac{7^6}{144}$ Customary Measure.

In a Statute Pole are 11 half Yards, which squared, make 121 square half Yards; and in a square Pole of 18 Feet, are 144 square half Yards, &c, for the Remainder, work as before, *viz.* by multiplying it by 4, &c. and the next Remainder by 40, &c. as spoke to before: So that the Answer is, that 172 Acres Statute Measure make 144 Acres 2 Roods, and 4 Poles of such Customary Measure.

An Example to the Contrary.

In 543 Customary Acres of 18 Feet to the Pole, how many Acres of Statute Measure, being 16 Feet and a half to the Pole;

543 Customary.
144 Square half Yards in a Customary Acre.

2172
2172
543

121) 78192 (640 Satute Acres.
726

55 &c.

The Remainder 26 multiplied by 4, produces 104, which not amounting to a Rood, should be multiplied by 40, their Product is 4160; which divided by 121 quotes 34 Perches, and 46 remains. So the Answer is, that 543 Customary Acres of 18 Feet to the Pole, makes 646 Acres 34 Poles, & $\frac{46}{121}$ of a Pole.

Note, Customary Acres, as well as Statute Acres, contain 160 square Poles or Perches; the Excess of Bigness is by the Bigness of the Pole.

Solid Measure.

IS that of Timber, Stone, Digging, Liquids, &c. and the Rule for Working is to multiply the Length taken in Inches, and the Breadth together, and then that Product by the Depth or Thickness and the last Product will be the Content in Cubic Inches, which if Timber or Stone, divide by 1728 (the Cubic Inches in a Foot solid) and the Quotient gives the Contents in solid Feet.

Example. If a Tree be 16 Feet long, and 18 Inches square; how many solid Feet doth it contain?

Multiply {	18	16
	18	12
	<hr/>	<hr/>
	324	192 the Length in Inches.
		324 Breadth and Thickness
		<hr/>
		768
		384
		576
		<hr/>
		1728) 62208 (36 Feet.
		5184
		<hr/>
		10368
		<hr/>
		(0)

Decimally.	By Practice.
Square { 1,5	1 -5
{ 1,5	1-6
	<hr/>
2,25 Breadth.	1--6
16 Length.	9 6 In $\frac{3}{4}$
<hr/>	<hr/>
36,00 Answer.	2-3
	4 times 4 is 16.
	<hr/>
	9-0
	<hr/>
	Feet. 36-0 Ans.
	<hr/>

Solid

Solid Measure.

- 40 Feet of round } Timber is a Ton or Load.
 50 — of hewn }
 1728 Inches is a Foot of Stone or Timber.
 27 Feet is a Yard.
 282 Inches is a Gallon of Ale or Beer.
 231 Inches is a Gallon of Wine.

Suppose there is given an oblong Piece of Timber, whose Breadth is 2,25, and Thickness 1,64 Feet, and Length 36,5 Feet how many solid Feet are contained therein?

2,25 Breadth.
 1,64 Thickness.

$$\begin{array}{r}
 900 \\
 1950 \\
 225 \\
 \hline
 3,6900 \\
 36,5 \text{ Length} \\
 \hline
 184500 \\
 221400 \\
 110700 \\
 \hline
 \end{array}$$

134,68 *Ans.* 134,68500, solid Feet or 134, $\frac{1}{2}$ nearly.

Of Timber Measure.

WHEN at any time you would know the, Content of any Piece of Timber by Vulgar or Decimal Arithmetic observe what follows, viz. The Tree being girted, and one fourth Part taken for the Side of the Square; multiply the Length of the Side of the Square in Inches into itself, and that Product by the Length in Feet: which last Product divide by 144: But if you multiply by the Length in Inches, then your Divisor must be 1728, and if any thing remains, divide such Remainder by 12 and the Quotient will be the odd Inches.

Example.

Suppose a Piece of Timber 15 Feet long, and a Quarter of the Girt of 42 Inches; what is the Content of that Piece,

The Work.

42 Inches the Side of the Square.

42

84

168

1764

15 Feet in Length

F. I.

144) 26460 (183 9 Anf.

144

1206

1152

540

432

12) 108 9 Inches.

(0)

Note, In this Example 1764 is multiplied by 15 in one Line. But the foregoing Example may be worked shorter by Decimals thus;

Squared { 3,5 the Side of the Square 42 Inches.
3,5

175

105

12,25 The Product are Feet.

15 Feet the Length.

6125

1225

18375 the Contents, viz. 183, $\frac{75}{100}$ or $\frac{3}{4}$ as before

But this common Way of taking $\frac{3}{4}$ of the Compass for the Side of the Square, which is equal to the Content of the circle

Circle in round Timber is erroneous, and gives the Solidity somewhat less than the true Content : but the true Way is to multiply half the Diameter by half the Compass, and then that Product multiply by the Length: which divide by 1728, and the Quotient is the Content. If you cannot come to measure the End of the Piece, you may know the Diameter by this Proportion, viz. as 22 is to 7, so is the Compass to the Diameter. Or you may find the Side of a Square of a round Piece of Timber, by

2821

Inch. 66

16926

16926

18|6186 *Ans.* 18 $\frac{6}{10}$ In.

Having the Breadth and Depth of a Piece of Timber or Stone ; to know how much in Length of it will make a solid Foot ; multiply one by the other, and let the Product be a Divisor to 1728, thus :

24 broad

18 thick

219

24

234(1728(4 Inches in Length.

1728

And thus you may make a Table to serve all Breadths and Depths, by which much Labour may be saved in multiplying and dividing, and yet measure any Piece of Timber thereby very exactly.

In square Timber, you must make the Inches squared a Divisor to 1728, and the Quotient will be the answer in Inches of Length, that will make a Foot solid.

Example.

If a Piece of Timber 8 Inches square, what Length of it will make a Foot?

64) 1728 (27

128

448

448

(0)

Ans. 27 Inches,
or 2 Feet 3 Inches
in Length.

Again,

Again Suppose a Piece be 28 Inches square, what Length will make a Foot? Answer, 5 Inches and one third.

The square of 18 is 324) 1728 ($5\frac{1}{3}$ equal to $\frac{1}{3}$
 1620

(108)

The Usual Way for tapering, Timber is by this Method, viz. take the Dimensions in the middle, and multiply that by the Length: which is not accurate, but if the Dimensions be taken in several Places, and the Mean be used, the Content thus found will be near the Truth

Digging.

IS measured by the solid Yard of 27 Feet; that is, 3 times 3 is 9, and 3 time 9 is 27, by which are measured Vaults or Cellars, Clay for Brick, &c. Other Things are measured by the Floor of 324 solid Feet.

Example 1.

If a Vault or Cellar be digged 9 Feet Deep, 4 Feet $\frac{1}{2}$ long and 3 Feet 9 Inches broad; what is the Content in solid Yards?

Feet.

4 $\frac{1}{2}$ long.

5 deep.

40 $\frac{1}{2}$

3 F. 9 broad

121 $\frac{1}{2}$ &c.

20 $\frac{1}{4}$

10

6 Inches $\frac{1}{2}$

3 $\frac{1}{2}$ of 6

27) 151 $\frac{3}{4}$ (5 Yards, 16 Feet $\frac{1}{4}$.
 (16)

Ex-

Example.

How many Yards of Digging will there be in a Vault that is 25 feet. 4 long, 15 f. 8 broad, and 7 feet. $\frac{1}{3}$ deep?

$$\begin{array}{r}
 25-4 \\
 \quad 3 \text{ times } 5 \text{ is } 15 \\
 \hline
 76-0 \\
 \quad 5 \\
 \hline
 380-0 \\
 \quad 8-5 \frac{2}{3} \\
 \quad 8-5 \frac{1}{3} \\
 \hline
 396-10 \frac{2}{3} \\
 \quad 7 \frac{1}{3} \\
 \hline
 2778-2 \frac{2}{3} \\
 \quad 148-5 \frac{1}{3} \\
 \hline
 \text{Yd.---F.---In.} \\
 27) 2926-8 \text{ (108---10---8} \\
 \quad 27 \\
 \hline
 \quad 10
 \end{array}$$

Example.

There is a Moat that is 648 Feet, long 24 Feet broad, and 6 Feet deep, how many Floor!

$$\begin{array}{r}
 648 \text{ long.} \\
 24 \text{ broad.} \\
 \hline
 2592 \\
 1296 \\
 \hline
 15552 \\
 9 \\
 \hline
 \hline
 \end{array}$$

Divide by 324) 139968 (432 Floors. Answer.

$$\begin{array}{r}
 \text{Ec.} \\
 \hline
 (0)
 \end{array}$$

solid

Solid Bodies being frequently painted, it is necessary to know how to find their Superficiality. To find the superficial Content of a Square, or many sided or round Pillar: Multiply the Sum of the Sides or Circumference, by the Height in feet; and the Product divided by 9, will be square Yards.

Of a Globe.

Multiply the Circumference in feet by itself, and then that Product by this Decimal, 0,0353678, and this last Product will be the Content in Yards.

To find the superficial Content of a Pyramid or Cone, multiply half the Sum of the Sides, or half the Circumference of the Base by the slant Height, in Feet; and the Product, divided by 9 will be square Yards.

If the Pyramid or Cone be not complete, that is, if a Part of the Top be wanting, add together the Circumferences at Top and Bottom, and half their Sum being multiplied by the slant Height, will be superficial Content

Note, A solid Yard square of Clay will make about 7 or 800 Bricks; and the Price of making is 7 or 8s. a Thousand, 3 Bags (or Bushels) and half of Line, and half a Load of Sand, will lay 1000 Bricks.

500 Bricks	{ make a Load.
1000 Plain Tiles	
25 Bags 1 C of Lime	

IT may not here be improper, as well for refreshing the Memory, as for improving the Understanding and forming the Mind with proper Notions and Ideas of Measuring, to give a short Repetition by demonstrative geometrical Figures, to explain what had been verbally and arithmetically before expressed.

And first for Planimetry, or superficial or flat Measure: Some of which is measured by the Foot square; as are Boards Glass, Marble, Freestone, and Pavements. The Dimensions are taken in Feet and Inches, and the Content given in square Feet.

Example 1.

Suppose there is an oblong or long Square, let it be board Glass or Pavements, &c. that contains on the longest Side (or the Length) 24 Feet and half, and the shortest Side (or Breadth) 14 Feet 4, as in the following Figure, *viz.*

$$\begin{array}{|c|} \hline \text{F. } 24 \frac{1}{2} \\ \hline \text{Area or Content is} \\ \hline 549 \text{ F. } 126, \\ \hline \end{array}$$

14,25 Breadth.

24,5 Length.

$$\begin{array}{r} 7125 \\ 5700 \\ \hline 2850 \end{array}$$

$$\hline 349,125$$

Rule. Multiply the Length by the Breadth, and cut off as many Places to the Right-hand as there are Decimals in the Length and Breadth.

Example 2.


Suppose a Board or Piece of Glass be in the Form of *Figure the First*, called a Rhombus, that is in the Shape of a common Pane of Glass, or Diamond Square.

Rule. To measure which, multiply the Breadth of *A. B.* by the Length of any of the Sides (for they are all equal) and cut off as many Places to the Right-hand as there are Decimal Places in both Multiplicand and Multiplier, as hinted before: As suppose the Breadth *A. B.* 8 feet 38 Parts, and the Length of the Side to be 8 feet 52 Parts, then the Work will appear thus;

$$\begin{array}{r} \text{F. P.} \\ 8,52 \\ 8,38 \\ \hline 6816 \\ 2556 \\ \hline 6816 \end{array}$$

Here the Multiplication is as in whole Numbers and the Content or answer is found to be 71 square feet and $\frac{3976}{10000}$ ten Thousandths of a foot, or 4 Inches $\frac{1}{2}$.

$$71,3976$$

 3976 is separated by a Comma, as above directed, and are so many 10000 Parts of a foot.

Example.

Again, admit a Piece of Measurement to be in the form of *Figure the Second*, called a Rhomboides; its Length 17 feet 25 Parts, and its Breadth 8 feet 58 Parts.

F. P.

17,25 Length
8,58 Breadth.

13800

8625

13800

The fore-mentioned figure
hath its opposite Sides equal,
and its opposite Angles alike.

148,0050 *Answer*, the Content is 148 feet.

Suppose a Board, Piece of Glass, Pavement, or Piece of Land, to represent, or be in the form of a Triangle, or three-cornered figure, expressed as in the Shape of *Figure the Third*. Every Triangle is half an Oblong, whose Length and Breadth is equal to the Perpendicular and Base.

Note, The dotted Line is the Perpendicular, the bottom Line the Base, and the Line from the Top of the Perpendicular to the left Angle of the Base is called the Hypothennuse.

The measuring of a Triangle hath already been shewn, and therefore I shall desist speaking any further thereto.

The *Fourth Figure* is called a Trapezium, and consists of 4 Sides: This figure, before it can be measured, must be divided into two Triangles, thus; *viz.* by a Line drawn from one Angle or Corner, to the Angle opposite to it, as in the figure.

Example. 4

Suppose the Dimensions of the Trapezium be before described to be, *viz.* the Base 16 F. 67; the one Perpendicular 12 F. 50, and the other 9 F. 68, (as in Figure 5) what is the Content?

The Operation.

One Perpendicular	12 50	} add
The other	9,68	

The Sum is	22,18
------------	-------

The half Sum is	11,09	which
multiply the whole Base	16,67	

produces 184,1703

which is 184 Feet, and $\frac{8703}{10000}$ of a Foot, equal to 10 Inches and a half.

Note

Note, If two Sides of a Trapezium are parallel, that is, equi-distant; then add them together, and half the Sum multiplied by the nearest Distance between those two Sides, gives the Content. Or if you measure in the Middle between two Sides or Lines that are of equal Length, the Answer will be the same.

Note also, The Painting, Plastering, &c. of irregular pieces in the form of Triangles, or not, if divided as above, may be measured as before; and brought into Yards (if the Content is to be so given in) by dividing by 9, as before shewn.

Of Regular Figures.

Figures that have more than 4 Sides are called Polygons, and those of them that have their Sides and Angles equal are called regular Polygons.

Regular Polygons have their Names from the Number of their Sides; thus a Figure having

3	} Equal Sides, is called a	{ Trigon, or Equilateral Triangle.
4		{ Tetragon, or Square.
5		{ Pentagon.
6		{ Hexagon.
7		{ Heptagon.
8		{ Octagon.
9		{ Nonagon.
10		{ Decagon.
11		{ Undecagon.
12		{ Duodecagon.
13		{ Quindecagon.

The Area of a Pentagon may be found by multiplying the Square of its Side by the Number 1,7204774. Thus if the Side of a Pentagon be 11 Feet, then the Square thereof will be eleven times 11, or 121 Feet.

Multiply 1,7204774
by 121

$$\begin{array}{r}
 17204774 \\
 34409548 \\
 17204774 \\
 \hline
 208,1777654
 \end{array}$$

U

There

Therefore the Area of the Pentagon will be upwards of 208 square Feet.

In like Manner, to find the Area of the

Trigon,	} Multiply the Square of the Side by	0,4330127
Tetragon,		1 0000000
Hexagon,		2 5980762
Heptagon,		3 6339124
Octagon,		4 8284271
Nonagon,		6,1818242
Decagon,		7 6912088
Undecagon,	}	9 3656401
Duodecagon,		11,961524

Of a Circle.

Figure the Ninth.

A Circle is contained under one Line called the Circumference or Periphery ; as *A B C*. All right Lines drawn from the Centre *E*, to the Circumference are equal, and called Radiusses, or half Diameters : And the long Line through the Centre from *A* to *C* is the Diameter.

To divide a Circle into 6 equal parts, extend the Compasses to half the Diameter, as from *A* to the Centre *E*, and the Extent applied to the Circumference will divide it into those parts.

The Diameter *A C* divides the Circle into two equal parts, each of which is called a Semi-circle ; and if a Semi-circle be divided into two equal parts, those parts are called Quadrants.

The Questions relating to the measuring of the Circle and its Parts may be solved as follows.

1. The Diameter being given to find the Circumference.

Rule. Multiply the Number 3,1415927 by the Diameter, and the Product will be the Circumference. *Note,* The Number 3,1416 will be exact enough in most cases.

Example. The Diameter of a Circle being 11 Inches, what is its Circumference ?

3,1416

11

3,1416

3,1416

Answer, 34,5576 (or above $34 \frac{1}{2}$) Inches.

2. The Diameter being given, to find the Area.

Rule. Multiply the Number 0,7853982 (or in common cases 0,7854) by the Square of the Diameter, and the Product will be the Area.

Example. What is the Area of that Circle whose Diameter is eleven Inches ?

11 times 11 121 0,7854

121

7854

15708

7854

Answer, 95,0334 square Inches.

3. The Circumference being given to find the Diameter.

Rule. Multiply the Number 0,3183099 (or in common 0,31831) by the Circumference, and the Product will be the Diameter.

Example. What is the Diameter of that Circle, whose Circumference is $34 \frac{1}{2}$ Inches.

$34 \frac{1}{2}$ — 34,5 0,31831

34,5

159155

127324

95493

Answer, 10,81605 (or almost 11 Inches.

4. The Circumference of a Circle being given, to find its Area.

Rule. Multiply the Number 0,0795775 (or in common 0,0796) by the Square of the Circumference, the Product will be the Area.

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Example. What is the Area of a Circle, whose Circumference is $34\frac{1}{2}$ Inches ?

34.5	1190.25
34.5	0.0796
1725	714150
1380	1071225
1035	833175

1190.25 Answer 94.743900 (or almost 95) square Inches.

3. The Area of a Circle being given, to find its Diameter.

Rule. Multiply the square Root of the Area by the Number 1,12837, and the Product will be the Diameter.

Example. What is the Diameter of that Circle whose Area is 95,0334 square Inches ?

95.0334 (9.75	1, 12837
81	9.75
187) 1403	564185
1309	789859
1245) 9434	1015533
9725	11,0016075

Answer, The Diameter is 11 Inches.

4. The Area of a Circle being given, to find its Circumference.

Rule. Multiply the square Root of the Area by the Number 3,5449, and the Product will be the Circumference.

Example. What is the Circumference of that Circle whose Area is 95,0334 square Inches ?

95.334)9.75	3 5449
	9.75
	177245
	248143
	3456375

Answer, The Circumference is $34\frac{1}{2}$ In.

5. To

5. To measure the Sector of a Circle. See Figure 10.
Case the First. If the Length of the Arc $D E$ and the Semi-diameter $C E$ be given :

Rule. Multiply the Length of the Arc by half the Semi-diameter ; and the Product will be the Area.

Case the Second. If the Number of Degrees contained in the Arc, and the Semi-diameter be given :

Rule. Multiply the Square of the Semi-diameter by the Number of Degrees contained in the Arc, and that Product by the Number 0,0087267, and the Result will be the Area required.

Example. Let the Arc consist of 90 Degrees, or $\frac{1}{4}$ of the Circumference, and the Semi-diameter be $3\frac{1}{2}$.

3 5	12,25	0,0087267
3 5	90	11025
<hr/> 175	<hr/> 1102,50	<hr/> 436335
105		174534
<hr/> 12,25		<hr/> 872670
		8,7267
		<hr/> 896715675

Of Solid Measure.

SOLID or Cube Measure hath been already defined, as well as superficial Measure, some of the Figures of which are numbered 6, 7, and 8.

To measure a Solid in Form of a Cube, which hath Length, Breadth, and Thickness all equal, you must multiply these into themselves ; and the last Product gives the Solidity or Content, either of Wood or Stone. A Cube hath 6 Sides, and is in Shape like a Dye.

Example. What is the Solidity of a Cube whose Side is 12 Inches ?

$$\begin{array}{r}
 12 \\
 12 \\
 \hline
 144 \\
 12 \\
 \hline
 1728
 \end{array}$$

1728 the Solid Inches in a Solid Foot:

To measure a Solid of unequal Length, Breadth and Thickness ; multiply the Length by the Breadth, and that Product by the Height ; the last Product will be the Solidity.

U 3

Example.

Example.

What is the Solidity of a Block of Marble whose Length is 10 Feet; Breadth $4\frac{3}{4}$ Feet; and Depth $3\frac{3}{4}$ Feet.

$$\begin{array}{r}
 5,75 \\
 35 \\
 \hline
 2875 \\
 1725 \\
 \hline
 20,125 \\
 10 \\
 \hline
 201,25
 \end{array}$$

201,25 the Solidity.

The Cone is measured by finding the superficial Inches at the Bottom of the Base thereof, which multiply by $\frac{1}{3}$ of the Inches in the Length, and that Product is the solid Quantity in Inches; which Inches divide by 1728, and the Quotient gives the Answer in solid Feet.

Example of finding the Solidity of the Cone, decimally, without dividing by 1728.

Let the Diameter of the Base be 2 Feet 6 Inches, and the Altitude 10 Feet 6 Inches.

2,5 the Diameter.

$$\begin{array}{r}
 2,5 \\
 \hline
 125 \\
 50 \\
 \hline
 6,25 \\
 ,7854 \\
 \hline
 2500 \\
 3125 \\
 5000 \\
 4375
 \end{array}$$

4,908750

4,908750 the Area of the Base.

3,5 $\frac{1}{3}$ of the Height.

24543750

14726250

171806250 the Solidity in Feet.

This Method may serve for tapering Timber, or for any other Thing of the Shape represented in Figure 7.

To measure a Pyramid.

Rule. Multiply the Area of the Base or Bottom by one Third of the perpendicular Height, and the last Product will be the Content in solid Feet: Or one third part of the Area at the Base, multiplied by the whole Altitude, gives the Content also.

Examples of both Ways.

Suppose there is given a square Pyramid (or Figure like a Spire Steeple) the Side of whose Base is 4 Feet and half, and the perpendicular Height 18 Feet; what is the Solid Content.

4,5	6,75 $\frac{1}{3}$ of 20, 25 the Area at the Base.
4,5	18 the whole Height.
<hr/>	<hr/>
225	5400
180	675
<hr/>	<hr/>

20,25 12150 *Answer* 12150 as before.

$6\frac{1}{3}$ of the
Altitude.

121,50 *Answer* 121 Feet, and $\frac{1}{20}$ or $\frac{1}{2}$.

When one Side of the Base is longer than the other, as admit one to be 2 F. $\frac{1}{2}$, and the other 1 F. $\frac{1}{2}$; then multiply the Length of the Base by the Breadth, and that Product by $\frac{1}{3}$ of the Height as before.

If the Base be a Polygon, find its Area by the Rule given in page 218; and then multiply it by $\frac{2}{3}$ of the Height.

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To measure the Frustrum or Segment, i. e. a Piece or Parts of a Pyramid, whose Ends are similar regular Polygons.

Multiply together the Sides of the greater and lesser Polygons ; multiply also the Difference of those Sides by itself ; add the $\frac{1}{3}$ part of the second Product to the first Product ; multiply the Sum by the Height, and by the Number which belongs to the Polygon in page 218, so shall the last Product be the Solidity.

To measure the Frustrum or Segment of a Cone.

Multiply together the Diameters at the Top and Bottom of the Frustrum ; multiply also their Difference by itself ; add $\frac{1}{3}$ part of the last Product to the first ; and multiply the Sum by the Height of the Frustrum, and by the Number, 0,7853982 ; so shall the last Product be the Solidity required.

Example.

What is the Solidity of the Frustrum of a Cone ; the Diameter of the greater End being four Feet, that of the lesser End two Feet ; and the Height nine Feet ?

4	2 Diff. of Diameters.
2	2
—	—

8 Product of Diameters, 4 ; $\frac{1}{3}$ of which is $1\frac{1}{3}$ 8 added $1\frac{1}{3}$ is $9\frac{1}{3}$, which multiplied by 9, the Height, produces 84.

Then multiply 0,7854
by 84

$$\begin{array}{r} 31416 \\ 62832 \\ \hline \end{array}$$

Solidity 65,9736

Of Gauging.

THERE is a near sort of Kindred or Affinity between the Art of measuring of Timber, and that of Gauging or measuring of Liquors; for both are performed by Cube or solid Measure, and therefore not improper closely to follow one another. For as often as there is found 1728 solid or cubic Inches in a piece of Timber, (of what form soever) so many solid Feet it is said to contain: So likewise in the Art of Gauging, so many times as 282 (the solid Inches in a Beer or Ale Gallon) are found in any Vessel of such Liquor, so many Gallons is such a Vessel said to hold. And so of Wine; but in that the Divisor alters, it being 241 solid or cubic Inches.

And the Gallon of Dry Measure contains $272 \frac{3}{4}$ cubical Inches.

Note, Every cubical Foot in Beer or Ale contains 6 Gallons, and almost a Pint.

The same in Wine Measure is 7 Gallons, and almost 2 Quarts.

A cubical Foot of Dry Measure contains 6 Gallons and somewhat above $\frac{1}{3}$ of a Gallon.

141 Inches makes 2 Quarts of Beer or Ale; 70 Inches $\frac{1}{2}$ one Quart, 35 Inches $\frac{1}{4}$ a Pint.

To find the Contents of any Vessel that hath the Form of a Cube, that is, a Figure whose Breadth, Depth, and Length are all equal, and is very well represented by the Shape of a Dye commonly played withal.

Rule. Multiply the Side into itself, and then again that Product by the Side; which last Product, if for Beer or Ale, divide by 282, the Inches in a Beer or Ale Gallon; if for Wine, by 241, the Inches in a Wine Gallon.

Example.

Suppose a Cube, whose Side is 70 Inches, I demand the solid Content in Beer and Wine Gallons?

79	282) 493039 (1748 Beer or Ale Gall.	
79	282	
<hr/>	<hr/>	
711	2110	Wine Gall.
553	1974	231) 493039 (2134
<hr/>	<hr/>	462
6241	1363	<hr/>
79	1128	315
<hr/>	<hr/>	231
56169	2359	<hr/>
43687	2256	793
<hr/>	<hr/>	693
493039 Cube Inches.	(103)	<hr/>
		1009
		924
		<hr/>
		(85)

To find the Content of a *Parallellopipedon*, which is a solid Figure contained under 6 sides, of which the Opposite are Parallel, and of the form of *Figure* the 12th.

Rule. Multiply the Length by the Breadth, and that Product by the Depth; and then divide by 282 for Beer or Ale, and 231 for Wine.

Example.

Admit the Length to be 95 Inches: What is the Content in Beer and Wine Gallons?

231) 135470 (586 Wine Gall.	95 Length.
1155	62 Breadth.
<hr/>	<hr/>
1997	190
<hr/>	<hr/>
&c.	5890
Rem. (104)	

5890
23 Depth.

17670
11780

283) 135470 (480 Beer Gall.

1132
Rem. (110)

To gauge a Back or Square Tun.

Example.

Suppose its Length 112 Inches, Breadth 72 Inches, and its Depth 48 Inches, what is its Content in solid Inches, and also its Content in Beer Gallons?

112 Length.	282) 387072 (1372 Gallons Ans.
72 Breadth.	282...
224	1050
784	846
8064	2047
48 Depth.	1974
64512	732
32256	564
387072 Solid Inches.	(168)

To bring those Gallons into Barrels, divide them by 36 the Gallons in a Barrel of Beer; thus:

36) 1372 (38
108
292
288
(4)

Answer, 38 Barrels and $\frac{4}{36}$ or $\frac{1}{9}$ of a Barrel; and for the Remainder 168, it is something above half a Gallon.

Note,

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Note, *The Duty of Excise upon strong Beer and Ale is 8s. per Barrel; Brewers are allowed 3 Burrels in 23 for Leakage, &c. both for strong and small Beer; and for Ale 2 in 22: So that the neat Excise of a Barrel of strong Beer to be paid by the common Brewers, is 6s. 7d. $\frac{2}{3}$ and $\frac{2}{3}$ of a Farthing; and of Ale, 6s. 10d. $\frac{2}{3}$ and $\frac{2}{3}$ of a Farthing, and for small Beer 1s. 3d. $\frac{1}{2}$ and $\frac{2}{3}$ of a Farthing.*

How to Gauge a Copper, round Tub, or Cask.

If it be of equal Bigness both at Top and Bottom, find the Cube Inches that it contains, and then bring it into Gallons as before.

But if it be wider at the Top than at the Bottom, or the contrary; then take the Width or Diameter of the Tub somewhat above the Middle, next to the broadest End, if it be taper; or find the mean Diameter thus: Suppose the Bung Diameter to be 26 Inches, and the Head Diameter of the Cask to be 23 Inches, the Difference between which is added to the lesser of the two Diameters, makes 25 for the mean Diameter sought. Having the mean Diameter, proceed to find the Content in solid Inches thus: First square the mean Diameter, multiply that square by 0,7854, and the Product will give the Content of the Liquor at one Inch deep, and this multiplied by the Length will give the solid Inches in the Copper, Tub, or Cask.

Example.

Suppose the mean Diameter to be 72 Inches, and the Length 56 Inches.

72	4071,5136
72	56
<hr/> 144	<hr/> 244290816
504	203575680
<hr/> 5184 Square.	<hr/> 228004,7616
,7854	
<hr/> 20736	
25920	
41472	
36288	
<hr/>	

4071,5136 Content at one Inch deep.

The above-found solid Inches 228004 brought into Gallons, make 808, and 148 solid Inches remain, something above half a Gallon ; in all 22 Barrels, 16 Gallons and $\frac{1}{2}$ of Beer.

Again, Admit the mean Diameter of a Cask of Wine to be 14 Inches, and the Length 72 Inches, what's the Content in Wine Gallons ?

14	0,7854
14	196
<hr/> 56	<hr/> 47124
14	70686
<hr/> 196	<hr/> 7854
	<hr/> 153,9384
	72
	<hr/> 3078768
	<hr/> 10775688
	<hr/> 231) 11083,5648 (47,9
	924
	<hr/> 1843
	1617 <i>An.</i> 58 Gal.
	<hr/> 2265
	2079
	<hr/> 186
	&c.

The Content of a Spheriod may be found thus: Multiply the Square of the shortest Diameter by the longest Diameter and then divide by 538 for Beer Gallons, and by 441 for Wine Gallons.

Example.

Suppose a Spheriod whose shortest Diameter is 74 Inches and the longest 135 Inches ; what is the Content in Beer and Wine Gallons?

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$$\begin{array}{r} 74 \\ 74 \\ \hline 296 \\ 518 \end{array}$$

5476 the Square of the shortest Diameter.
125 the Longest Diameter.

$$\begin{array}{r} 27380 \\ 65712 \end{array}$$

538)684500(1272 Gallons of Beer.
538.

$$\begin{array}{r} 1465 \text{ \&c.} \end{array}$$

$$\begin{array}{r} (164) \end{array}$$

441)684500(1552 Gallons of Wine
441.

$$\begin{array}{r} 2435, \text{ \&c.} \end{array}$$

$$\begin{array}{r} (61) \end{array}$$

To find the Content of a Frustrum or Spheriod: To twice the Square of the Bung Diameter, add once the Square of the Head, and multiply that Sum by the Length: Then for Beer divide by 1077; and for Wine Gallons, divide by 882.

Example.

A Cask whose Bung Diameter is 23 Inches, Head Diameter 31 Inches, and Length 27 Inches, what is the Content in Beer and Wine Gallons?

23	21
23	21
<hr/>	<hr/>
69	21
46	42
<hr/>	<hr/>
529	441

add

add $\left\{ \begin{array}{l} 529 \\ 529 \\ 441 \end{array} \right\}$ twice the Square of the Bung Diameter.
once that of the Head Diameter.

1499
27 the Length.

10493
2998

1077)40473(37 Beer Gallons.

3231.

8163

7539

(624)

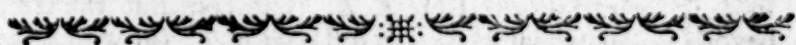
882(40473(45 Wine Gallons

3528.

5193

4410

(783)



The Construction of some useful Geometrical Problems.

1. *At a given Point near the Middle of a Right Line given, to erect a Perpendicular. See Figure the 14th*

LET CD be the Line given; to have a Perpendicular erected on it from the Point B ; with the Compasses (opened at a Convenient Distance) place one Foot at the Point B and with the other make the two Marks F and E , on either Side of B ; then having the same, or any other more convenient Distance in the Compasses, set one Point on E , and with the other Describe the Arc GG ; which being done, without altering the Distance last used, set one Foot at F . and with the other describe the Arc HH . crossing the former at the Point A ; through which Intersection with a Ruler draw a Line from A to B , which will be perpendicular to the Line CD .

2. *How to raise a Perpendicular at or near the End of a Line*

This is effected several Ways; but I shall instance only two, which are very easy—See Figure 15.

First Method.

Suppose the Line $A. B.$ be given to raise a Perpendicular near the End, $A.$

First open your Compasses to any convenient Distance, and set one Foot on the Point A ; and with the other describe the Arc FED ; then with one Foot of the Compasses in D , (they retaining the same Distance) cross the Arc in E ; and then setting one Foot in E , with the other make the Arc AFG , crossing the first Arc in F . Again set one Foot in F , and with the other describe the small Arc HH , crossing the former in the Point C ; so the Line AC being drawn, will be the Perpendicular required.

The Second Method.

Admit $B.$ be the Point given on which to draw the Perpendicular BI . Open the Compasses to any convenient Distance; and setting one Foot on the point B , pitch down the other Foot at Random, as suppose at K ; then the Foot resting in K , turn the other about till it cross the Line AB in L ; then draw the Line KL , (and continue the same beyond K , setting off the same distance KL , (at which the Compasses already stand) from K to M , so a Line drawn from B , through M , will be the Perpendicular required.

3. *How to divide a Right Line in two equal Parts.* See Figure, the 16th.

Suppose the Line AB , be given to be divided into two equal Parts. Take in the Compasses any Distance above half the Length of AB , and setting one Foot on the Point A , with the other draw the Arc FDE ; then (with the Compasses unaltered) set one Foot B , and with the other cross the former Arc both above and below the Line, in the Points F and G ; then a Line drawn from F to G shall intersect, or cut the given Line in H , and divide the Line AB into equal Parts, AH and HB .

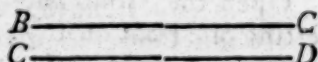
4. *A Line being given; how to draw another Line parallel therunto at any Distance required, or through any Point assigned.*

Of parallel Lines there are two Sorts, viz. *Straight or Circular*. And all Circles drawn on the same Centre, whether greater or lesser one than the other, or said to be parallel or concentric, that is having one common Centre, See Figure the 10th.

In this Figure the Circle $ABCD$ is concentric or parallel to the Circle $EFGH$, because both of them are drawn from the same Centre. The Line AC is the Diameter of the greater Circle, and the Line EG of the lesser Circle, And all right Lines drawn from the Centre to either of the Circumferences are equal with respect to their Periphery; and such Lines called half Diameters, and sometimes the Radius of the Circle, and will divide the Circle into 6 equal Parts each containing 60 Degrees, and the whole Circle 360; into which all the great Circles of the Sphere are supposed to be divided.

Of Parallel Right Lines.

Right-lined Parallels; are lines drawn on a Plane of equal Length and Distance; and though infinitely extended will never meet, and in all Parts retain an equal Distance such as these undeneath.



To draw a Right Line parallel to another Right Line at a Distance given. See Figure the 18th.

Take in your Compasses the given Distance GH ; then setting one foot in E draw the Arc IK then moving to F , describe the Arc LM ; then laying a Ruler on the Top of the two Arcs, just touching them, drawing the Line NO which will be parallel to the given Line EF .

5. *Though any 3 Points (not in a straight Line) to describe a Circle. See Figure the 19th.*

Let the Point given be AB , and C through which it is required that a Circle be drawn. First, set one Foot of the Compasses in one of the given Points, as suppose in A , and extend the other Foot to B , another of the Points, and draw the Arc of a Circle GFD ; then (the Compasses not altered) set one Foot in B , and with the other cross the said Arc with two small Arcs, in the Points D and E : and draw the Line DE . Thirdly set one Foot in C , (the Compasses being at the same Distance) and with the other Foot cross the first Arc GFD in the Points F and G , and draw the Line FG , crossing the Line DE in the Point O , which is the Centre sought for; in which place one Foot of the Compasses, and describe the Circle at the Distance OA , and it will pass through all the given Points, A , B , and C .

How to make the Line of Chords Geometrically at any assigned Length or Radius.

Since in the Art of Dialling, there is a frequent Use made of the Line of Chords, it is proper here to shew the making thereof.

A Line of Chords is 90 Degrees of the Arc of a Circle transferred from the Limb of the Circle to a straight Line; now every Circle; whether great or small, is divided (or supposed to be) into 360 equal Parts, called Degrees: So the Semi or half Circle contains 180; the Quadrant or Quarter 90, and the Radius or Semi-Diameter (which is that Line with which the Circle or Semi-Circle is drawn or described) is always equal to 60 Degrees of that Circle which it describes, and therefore 60 Degrees of a Line of Chords is called the Radius thereof.

To make the Line of Chords; as in Figure the 20th.

First draw a Line to any Length, CBD , and on the Middle thereof erect the Perpendicular AB ; next open your Compasses to the Radius or Length that you would have your Line of Chord be of; which admit AB , and with that Distance on B as the Centre, describe or draw the Semi-circle CAD , which is divided into two equal Parts or Quadrants by the perpendicular Line AB ; thirdly divide the Arc or Quadrant AD , into 90 equal Parts or Degrees, which is done by taking the Length of the Line AB , and setting that Distance on the Quadrant AD , and from D to R ; so is DR 60 Degrees, and AR 30 Degrees; then take the Distance AR , and set it from D S , so is the Quadrant divided into three equal Parts, at the Points S and R each containing 30 Degrees: This done divide the several Spaces between AR , RRS , and SD , into three equal Parts, each of which will be 10 Degrees according as the Numbers are seen and set apart to them. And these again divided into two equal Parts, each Part contains 5 Degrees; and every of these into 5 smaller, as in the Representation: and so the whole Quadrant $ASRD$ being thus divided into 20 Degrees, set one Foot of the Compasses in D , and open the Foot to A , and describe the Arc AEF touching the Line CD in F , so is the point F , upon the Right Line CD the Chord of 90 Degrees. Fifthly, open the Compasses from D to 80 Degrees, and describe the Arc 80 GHE so shall the point H be the Chord of 70 Degrees. Sixthly open the Compasses from D to 70, describe the Arc 70 I

K, so is K the Chord of 70 Degrees. Again, Open the Compasses from D to R, the Radius of 60 Degrees, and describe the Arc R L B, so is B the Chord of 60 Degrees equal to the Radius. Do the same by 50, 40, 30, 20, and then you will have the Line D F divided into 90 unequal Parts, called Chords, as in Figure.

Thus much of the Line of Chords frequently made Use of in Dialling, where there is not the Conveniency of having a Mathematical Instrument-maker near at Hand.

Note, *A Degree is the 360th Part of the Globe, or of any Circle: each of which Degrees is supposed to be divided into 60 Parts, called Minutes; so that 45 Minutes is three Quarters of a Degree, and 30 Minutes half a Degree, and 15 Minutes one Quarter of a Degree.*

Instrumental Arithmetic.

AS Problems or Questions in Measurement, &c. are solved or answered arithmetically by the Pen, so are they also instrumentally taken by Compasses, from certain Lines &c. or Rules made for that purpose, for the Help of those that are deficient in Arithmetic, or for a quicker Dispatch of Business; and such Performances are called *Instrumental Arithmetic*; and of these Instruments, the most in Vogue or Use, are these three: 1. The Carpenters plain Rule; 2. Gunter's Line; 3. Coggleshall's sliding Rule.

1. The Carpenters Plain Rule.

I shall describe and say something of the *Carpenters Plain Rule*, in Relation to its Uses, &c.

Its Description.

This Rule is made Use of in measuring Boards and Timber, being two Feet in Length, and divide into twenty-four Parts or Inches, and every one of those Parts or Inches subdivided into half Inches, and each of those Halves into Quarters, and each Quarter into two Parts, and the whole Length into 192 Parts.

This Rule is well known and therefore not absolutely necessary of Representation; but however for the better understanding it, I shall give one thus:

Under Broad Measure, thus described,

1	2	3	4	5	6	7
2	0	4	3	2	2	
0	0	0	0	4	0	

This Line begins at 6, and goes on to 36, within 4 Inches of the Rule on the Right-hand.

Its Use.

<i>In. deep.</i>		<i>Feet In. Pts.</i>		} in Length make a Foot square.
If a Board be	1	12	0 0	
	2	6	0 0	
	3	4	0 0	
	4	3	0 0	
	5	2	4 0	
	6	2	0 0	

By this Table it is manifest, and easily understood, That a Board of 4 Inches requires 3 Feet in Length to make a Foot square, and a piece of 3 Inches broad will require 4 Foot in Length to make a Foot square, &c.

At the other End of this Rule is a Table called *Under Timber Measure*; and thus described :

1	2	3	4	5	6	7	8
144	16	36	9	5	4	2	2
0	0	0	0	9	0	11	3

This Line begins at 8 and half, and goes on (by Division) to 36.

<i>In. Square.</i>		<i>Feet.</i>		} In Length make a solid Foot
a piece of Tim- ber of	1	144,	0	
	2	36,	0	
	3	16,	0	
	4	9,	0	
	5	5,	9	
	6	4,	0	
	7	2,	11	
	8	2,	3	

By this Table it is plain, that if a piece of Timber is 6 Inches square, then 4 Feet in Length of that piece will make a solid Foot.

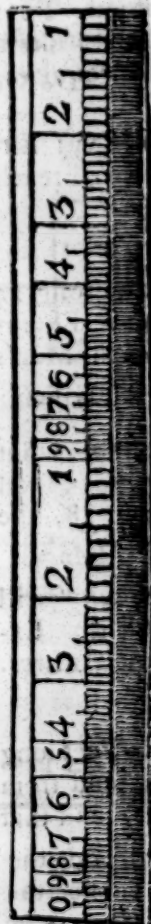
It is a common Method with Carpenters to add the Breadth and Thickness of a piece of Timber in Inches together, and call the Half thereof the Side of the Square of that piece ; but this method gives the Content more than it is ; and the greater the Difference the larger the Error. But the true Square may be found in *Gunter's Line*, thus:
Place

Place one Point of the Compasses upon the Line at the Thickness and the other at the Breadth; then half of that Extent will reach, from either the Breadth or Thickness, to the Side of the true Square in Inches.

2. Gunter's Line.

This Line is commonly set on the Carpenters plain Rule and consists of two Lines numbered 1, 2, 3, &c. one set at the End of the other, and it is somewhat of the following Form.

Gunter's Line



To prove the Line by the Compasses, observe that the

Distance from $\left\{ \begin{array}{l} 1 \text{ to } 2 \\ 5 \text{ to } 10 \\ 4 \text{ to } 8 \end{array} \right\}$ is equal to $\left\{ \begin{array}{l} 2 \text{ to } 4 \\ \text{the Distance} \\ \text{from } 4 \text{ to } 8 \end{array} \right\}$ &c.

To Number on Gunter's Line.

Observe, that the Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, sometimes signify themselves simply or alone; at other times, 100, 200, 300, or 1000, &c.

To find a Number on the Line as suppose 134

For the Figure 1, account 1 on the Line; and for 3 take 3 of the largest Divisions; and for 4 take 4 of the smaller Divisions; and that is the point. Again, to find 750 on the Line: For 7 take 7 on the Line, for 50 take 5 of the great Divisions, and that is the Point.

To find a small Number on the Line; as suppose 12.

For 10, take 1 as before, and for 2 take 2 of the largest Divisions, and that is the point.

In measuring Boards or Timber, it is best to have a Line of 2 Feet long, and Compasses 1 Foot long.

Note, Let the Measurement be by the Inch, Foot, Yard, Pole, Rod, &c. it is best to have it Decimally divided, or so supposed, that is, into 10th Parts.

Note also, That if one point of the Compasses reach beyond the Line in the Work, remove the other point to the same Figure or place on the other Line.

Mul-

Multiplication by Gunter's Line.

To multiply by 7, set one Foot of the Compasses on it in the Left-hand Line, and extend the other to 5 upwards, or toward the Right hand, and with the same Extent place one Foot in 7, and the other Foot will fall on 35 in the Right-hand Line, which is the Answer.

Division in Gunter's Line.

Example 1. Divide 63 by 3; extend from 3 to 1 downwards, or towards the Left-hand, and the Extent will reach the same Way from 63 to 21 the Quotient.

N. B. In multiplying you must always extend upwards, that is from 1, to 2, 3, 4, &c. and on the contrary, in dividing extend downwards.

Example 2. Divide 288l. equally among 16 Men: Extend from 16 to 1 downwards; and that Extent will reach the same Way, from 288l. to 8l. for each Man.

Again.

Example 1. Suppose 750l. were to be divided among 25 Men: Extend from 25 to 1 downwards; and that Extent will reach the same Way, from 750l. to 30l. each Man's Share.

Rule of Three Direct

Example 1. If 5 Bushels of Barley cost 11 Shillings, what will 40 Bushels cost? Extend from 5 to 11, upwards; and that Extent will reach the same Way, from 40 to 88, the Shillings required.

Example 2. If 3 Ells of Holland cost 10s. 6d. what will 40 Ell cost? Extend from 3 $10\frac{1}{2}$ upwards; and that Extent the same Way will reach from 40 to 140s. the Answer.

The Use in Board-Measure.

Example. If a Board be 9 Inches broad, and 19 Feet long what is the Contents superficial square Feet? Extend from 12 (the Centre of Foot Measure) to 9 downwards, and that Extent the same Way will reach from 19 to 14 and $\frac{1}{2}$.

In Timber-Measure.

Example, A piece of Timber of 24 Inches square, and 8 Feet long, what is the Content in solid Feet? Extend from 12 the Centre, to 24 upwards, and that Extent twice the same Way will reach from 8 to 32 Feet the Contents.

Brick-

Brick-Work.

How many Rods of Work are there in 4085 Feet? Extend from 272 downwards to 2. and that Extent the same Way from 4085, will reach 15 Rods, the Answer.

3. *Coggleshall's Sliding Rule.*

The next Instrument I shall speak of, is that which goes by the Name of *Coggleshall's Sliding Rule.* And first of

Its Description.

This Rule is framed 3 Ways; sliding by one another as the Glaziers Rule; sliding on one Side of a two Feet Joint rule; the back part being flat on which are sundry Lines and Scales.

Upon the aforesaid sliding Side of the Rule, are four Lines of Numbers, three are double Lines, and one a single Line of Numbers marked with A B C and D, the three marked A B and C are called double Lines of Numbers, and figured 1, 2, 3, 4, 5, 6, 7, 8, 9, Then 1, 2, 3, 4, 5, 6, 7, 8, 9, & 10, at the End. That marked D, is the single Line of numbers, and figured 4, 5, 6, 7, 8, 9, 10, 20, 30, 40, and at End 40, even with and under 10, in the double Line next to it; and that is called the Girt Line, and so marked in the Figure.

The Figures on the three double Lines of Numbers, may be increased or decreased at pleasure; thus 1 at the Beginning may be called 10, 100 or 1000; and at 2 is 20, 200 or 2000, so that when 1 at the Beginning is 10, then 1 in Middle is 100, and 10 at the End is 1000, but if 1 at the Beginning is counted for 1, then 1 is 10 and 10 at the End is 100.

And as the Figures are altered, so must the strokes or Divisions between them be altered in their Value, according to the Number of the parts they are divided into; as thus from 1 to 2, it is divided into 10 parts, and each Tenth part is divided into five parts; and from 2 to 3, it is divided into 10 parts, each Tenth into 2 parts, and so on from 3 to 5; and then from 3 to 6 it is divided into 10 parts only; and so on unto 1 in the Middle of the Rule, or the End of the first part of the double Line of Numbers. The second part of the double Line is divided like the first.

The Girt-Line marked D, is divided from 4 to 5 into 10 parts, and each 10th into 2 parts, and so on from 5 to 10; and then from 10 to 20, it is divided into 10 parts, and

each Tenth into 4 parts? and so on all the Way from 20 to 40 at the End, which is right against 10 at the End of the Double Line of Numbers.

The Lines on the Back-side of this Rule that slide on one Side, are these, viz. a Line of the Inch Measure from 1 to 12, each divided into Halves, Quarters, and Half-quarters; another Line of Inch Measure from 1 to 12, each divided into 12 equal parts, and a Line of Foot Measure, being one Foot divided into 100 equal parts, and figured 10, 20, 30, 40, 50, 60, 70, 80, 90, and 100, even with 12 on Inch Measure.

And the back Side of the Sliding Piece is divided in Inches, Halves, Quarters, and Half-quarters, and figured from 12 to 24, so that it may be slid out to 2 Feet, to measure the Length of a Tree, or any Thing else you have occasion to measure.

The Use of the Double Scale.

Example.

Suppose there is a Geometrical Square, whose Sides are 3 Feet $\frac{1}{2}$ each: Set one Foot on the Line B, to 3 $\frac{1}{2}$ on the Line A, and then against 3 $\frac{1}{2}$ on the Line B, is 12 Foot $\frac{1}{4}$ on the Line A, which is the Content of such a Squire.

F. Pts

3-6	
3-6	
10-6	} Arithmetically.
1-9	
12-3	

Proof.

Suppose the Side of a Rhombus be 8 Feet 6 Inches and $\frac{1}{4}$ and the Breadth or Line A B 8 F. 4 $\frac{1}{4}$ what is the Content? Set one Foot on the Line B, to 8 Feet $\frac{1}{1000}$ on the Line A, then again 8 Feet $\frac{1}{1000}$ on the Line B, is 71 Feet $\frac{1}{1000}$ parts of a Foot on the Line A, and to know the Value of the Decimal, or part of the Foot, look for $\frac{1}{1000}$ on the Rule, and you will find against it 4 Inches $\frac{1}{4}$ so that the Content of this Rhombus is 71 Feet, 4 Inches $\frac{1}{4}$.

Again, Suppose the Length of a Rhomboides to be 14 F. $\frac{2}{3}$ or 17 $\frac{2}{3}$ %, and the Breadth 8 F. 7 or 8 $\frac{1}{10}$ %, what is the Content?

Content? Set one Foot on the Line *B* to 17, 25 on the Line *A*, then against 8, 58 on the Line *B*, is 148 Feet on the Line *A*. The Figure hath been represented before, and operated Arithmetically, therefore it is here unnecessary.

Let the Base of a Triangle be 4 Feet 1 Inch $\frac{3}{4}$, and the Perpendicular 2 Feet $1\frac{1}{2}$: the Half of the one, is 2 Feet 7 Parts; and of the other 1 Foot 7 Parts. Set one on the Line *B*, to 4, 15 on the Line *A*; then against 1, 07 half the Perpendicular on the Line *B*, is 4 Feet and almost $\frac{1}{2}$ a Foot for the Content. Or if you set one on the *B*, to 1, 07 on the Line *A*, against 5, 15 on the *B*, is 4, and almost $\frac{1}{2}$ a Foot on the Line *A*.

Again, another way. If you set on one the Line *B* to 4, 1 on the Line *A*, then against 2, 25 on the Line *B* is 8 *F.* $\frac{2}{3}$ (which is about 11 Inches) on the Line *A*, the half wherefore is 4 *F.* 5 Inches $\frac{1}{2}$, which is the Content of the Triangle.

G E O G R A P H Y.

Geography is the Art of describing the Figure, Magnitude, and Position of the Surface of the Earth and Seas, and their Parts.

Many and sufficient Arguments may be produced to prove that the Earth and Seas are of a Spherical or globular Figure: one of them may be sufficient in this place, *viz.* that Ships in sailing from High Capes or Head-Lands, lose Sight of their lower parts first; and continue gradually to lose Sight of those which are situate higher and higher, till at last the Top vanishes; which could not be unless the Surface of the Sea was convex; now this Convexity of the Sea is found to be uniform in all parts thereof, therefore the Surface of the Waters is spherical; which being granted, that of the Land must be nearly so, because its Extremity sets Limits to the Waters.

The whole Body of the Earth and Sea is therefore called the terraqueous Globe.

Since, as has been before observed, all Circles are divided into 360 Degrees, therefore any great Circle surrounding the terraqueous Globe, is usually so divided. Our ingenious country-man Mr. Richard Norwood, about the Year 1635, by an accurate Measurement of the Distance between London and York, found that a Degree of a great

Y

Circle

Circle was about $69\frac{1}{2}$ Statute Miles in Length, and consequently that the Circumference of the terraqueous Globe was 25,020 Miles; whence its Diameter will be 7964 Miles.

The Sea covers the greater part of the terraqueous Globe, out of which the Land rises with very slow Ascents, the Height of the loftiest Mountains thereof being hardly the $\frac{1}{1000}$ part of the above found Diameter, which is but just sufficient to give the Rivers a flow and easy Descent.

Geographers have found it necessary to imagine certain Circles to be drawn on the Surface of the Earth, for the better Determination of the Position of Places thereon.

These are either greater or lesser Circles; great Circles divide the Globe into two equal parts, the lesser Circles divide it into two unequal parts.

There are six Kinds of great Circles; two of them, *viz.* the Equator or Equinoctial and the Ecliptic are fixed; but the others, *viz.* the Meridians, the Circles of Longitude, the Horizons, and the vertical Circles are variable, according to the part of the Globe they are appointed to.

There are two Points on the Surface of the terraqueous Globe, called the *Poles of the Earth*, which are diametrically opposite to each other: the one is called the *North*, and the other the *South Pole*.

The Equator is that great Circle which is equally distant from both the abovementioned poles, and is so called from its dividing the terraqueous Globe into two equal parts; named from the Poles which are situated in each, the Northern and Southern Hemispheres: It is also called Equinoctial, because when the Sun enters it, the Days and Nights are of equal Length in all parts of the Globe: Seamen commonly call this Circle the Line.

Meridians, or Circles of terrestrial Longitude, are supposed to be drawn perpendicular to the Equator, and to pass through the Poles; they are called Meridians or Mid-day Circles, because when the Sun comes to the Meridian of any place, it is Noon or Mid-day at that place.

Hence every particular place on the Surface of the terraqueous Globe hath its proper Meridian, and consequently a Traveller who doth not directly approach to or recede from one of the Poles is continually changing his Meridian.

With respect to the two Circles above described, every place upon the Earth is said to have its particular Latitude and Longitude.

The

The Latitude of any place upon Earth, is its distance from the Equator, in a direct Line towards one of the Poles, and since the Meridians proceed in such a direct Line, therefore Latitude is reckoned in Degrees and parts of Degrees, on the Meridian of the place.

The Longitude of any place upon Earth is the East or West Distance of the Meridian of that place, from some fixed Meridian, at which Longitude is supposed to begin : Now since all the Meridians pass through the Poles, they coincide with one another at those points, and their greatest Distance from each other will be, when they are farthest from those points of coincidence, *viz.* at the Equator ; therefore Longitude is reckoned in Degrees and parts of a Degree of the Equator.

Geographers have differed very much in the Meridian from whence they have assumed the Beginning of Longitude ; the Ancients chose the Meridian of the *Canaries*, which they called the Fortunate Islands ; others have pitched upon the Islands *Azores*, or the Western Islands ; but the most usual way is now to reckon Longitude from the Capital of that Country in which an Author writes ; and accordingly the Longitude is hereafter reckoned from the Meridian of *London*.

Parallels of Latitude are small Circles drawn parallel to the Equator at any assigned Distance therefrom ; therefore every particular Place on the Surface of the terraqueous Globe hath its proper Parallel of Latitude.

There are four of these Parallels of Latitude that are particularly remarkable, *viz.* the two Tropics and the two Polar Circles ; but for the better Explanation of those Properties, it will be necessary, first to define the Ecliptic.

The Ecliptic is that great Circle in which the Sun seems to perform its annual Motion round the Earth ; this Circle makes an Angle with the Equator of $23^{\circ} 29'$; it intersects it in two opposite Points, called the Equinoctial Point ; and those two points in the Ecliptic which are farthest from the Equinoctial Points are called the Solstitial Points.

The Tropic of Cancer is a Parallel of Latitude $32^{\circ} 29'$ distant from the Equator in the Northern Hemisphere, passing through the Northern Solstitial Point of the Ecliptic above described : And,

The Tropic of Capricorn is a Parallel of Latitude, as far distant in the Southern Hemisphere, passing through the Southern Solstitial Point.

The Arctic Polar Circle is Parallel of Latitude $23^{\circ}29'$ distant from the North Pole ; and the Antarctic Polar Circle is a Parallel of Latitude, as far distant from the South Pole.

The Tropics and Polar Circles divide the Globe into five parts called Zones, that is to say, Girdles or Belts ; one of them is called the Torrid ; two, Temperate and two, Frigid.

The Torrid Zone, so called from the great Heat of the Sun (which is vertical, or passeth directly over the Heads of the Inhabitants twice in a Year) is situated between the two Tropics, and therefore about 47 Degrees in Breadth ; the Inhabitants are called *Amphicians*, that is, such as have their Shadows cast both Ways ; the Sun being seen at Noon sometimes to the North and at other Times to the South of them.

The Northern Temperate Zone is situated between the Tropic of *Cancer* and the Arctic Polar Circle ; and the southern Temperate Zone, between the Tropic of *Capricorn* and the Antarctic Polar Circle : They are each of them about 43 Degrees broad : the Inhabitants are called *Heteroscians*, that is, such as have their Shadow but one Way, for at Noon the Shadow of the Inhabitants of the northern Temperate Zone, are always cast northward ; and those of the Inhabitants of the Southern, southward.

The Frigid Zone contains all that Space between the Polar Circles and the Poles themselves ; the northern Frigid Zone, being surrounded by the Arctic Circle, and the southern by the Antarctic : the Inhabitants are called *Periscians*, because (when the Sun is on the same Side of the Equator as those Inhabitants are) their Shadows are (in the Space of 24 Hours) cast of all Sides, or quite round them. The Sun does not set in the places within these Zones, during several successive Revolutions or Days in the Summer ; in the Winter he doth not rise for a like Space of Time. At the Poles themselves the Sun is visible for half the Year, and invisible for the other half.

If any place on the Globe (except the Poles and Equator) be particularly considered, there will be three other Places on the same Meridian which have more immediately a Relation thereto, *viz.* 1. That Place which has the same Latitude on the other Side of the Equator ; the Inhabitants of this place are called *Antæci* or *Antæcians* ; they have Mid-day and Mid-night at the same Time with those of the place assumed, but the Season of the Year are different, the Summer of the one being the Winter of the other.

2. That place which is on the same parallel of Latitude but is 100 Degrees different in Longitude; the Inhabitants of this place are called *Periaci* or *Periacians*; they have Summer and Winter at the same Times with those of the place assumed; but the Times of the Day are different, the Mid-day of the one being the Mid-night of the other.

3. That place which has the same Latitude on the other side of the Equator, and is 180 Degrees different in Longitude: This place is diametrically opposite to the place assumed; its Inhabitants are called *Antipodes*, and their Seasons of the Year, as well as Times of the Day, are totally Opposites.

The Horizon is that great Circle which divides the upper or visible Hemisphere of the World, from the lower or invisible; the Eye of the Spectator being always in the Centre of the Horizons; hence every particular place on the terraqueous Globe hath a different Horizon; and quently a Traveller proceeding in any Direction is continually changing his Horizon.

The Circle is by Mariners divided into 4 Quarters, containing 60 Degrees; the four points quartering this Circle, are called Cardinal Points, and are named *East*, *West*, *North*, and *South*: the East and West are those points on which the Sun rises and sets when it is in the Equinoctial; and the North and South Points are those which coincide with the Meridian of the place, and are directed toward the North and South Poles of the World.

Each Quarter of the Horizon is farther divided into 8 points, which are very necessary to the Geographer for the distinguishing the Limits of Countries; but the Use of those Divisions is much more considerable when applied to the *Mariner's Compass*.

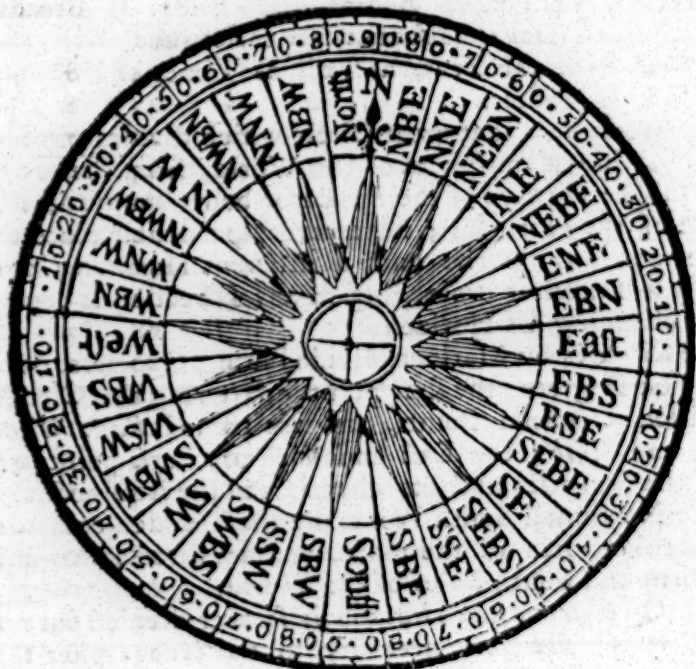
Before the Invention of this excellent and most useful Instrument, it was usual in long Voyages to sail by or keep along the Coast, or at least to have it in Sight; as is manifest and plainly evident, by the Voyages of *St. Paul*, *Acts* xx. 13. and xxviii. 2. which made their Voyages long, and very dangerous, by being so near the Shore. But now, by the Help of a Needle touched by the Magnet or Loadstone, which by a wonderful and hidden Quality inclines the point always northerly, the ingenious Mariner is directed his proper course of sailing through the vast Ocean and unfathomable Depths, to his intended port: And if the Wind

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be favourable, can sail near 333 Leagues, or 1000 Miles in a Week, through the darkeſt Weather, or darkeſt Night, when neither Land, Moon, nor Stars, are to be ſeen, which before were the only Guide ; and if not ſeen, the Sailors were at a great Loſs, and expoſed to the moſt imminent Danger.

Beheld the Figure or Representation of the ſaid Compaſs, with the Cardinal and other Points as followeth :

The Mariner's Compaſs.



The Compaſs, as above given, is a Representation of the Horizon on a circular piece of paper called a Card, which Card being properly fixed to a piece of Steel called the Needle, and placed ſo as to turn round a pin that ſupports it, will ſhew the poſition of the Meridian and other points, and conſequently towards which of them the Ship ſails.

Note, The Letters *N B E*, *N N E*, *N E B N*, &c. are to be read North by Eaſt, North North Eaſt, North Eaſt by North, &c.

A Climate is a Space of the terraqueous Globe contained between two ſuch Parallels of Latitude,, that the Length of the longeſt Day in the one exceeds that in the other by half an Hour.

There

There are 60 Climates, 30 to the North and 30 to the South of the Equator : 24 of each 30 being situate between the Equator and Polar Circle, differ in the Length of their longest Day by 24 Hours ; but in the remaining 6, between the Polar Circles and Poles, the Differences of the Lengths of the longest Days are each a Month.

A Table of the Climates, between the Equator and the Polar Circles.

Climate.	Longest Day.	Begins Latitude.	Ends Latitude.	Breadth.
1	12 $\frac{1}{2}$ Ho.	0° : 0'	8° : 34'	8° : 34'
2	13	8 : 34	16 : 43	8 : 09
3	13 $\frac{1}{2}$	16 : 43	24 : 11	7 : 28
4	14	24 : 11	30 : 45	6 : 34
5	14 $\frac{1}{2}$	30 : 45	36 : 30	5 : 45
6	15	36 : 30	41 : 22	5 : 52
7	15 $\frac{1}{2}$	41 : 22	45 : 31	4 : 09
8	16	45 : 31	49 : 01	3 : 30
9	16 $\frac{1}{2}$	49 : 01	51 : 58	2 : 57
10	17	51 : 58	54 : 29	2 : 31
11	17 $\frac{1}{2}$	54 : 29	56 : 37	2 : 08
12	18	56 : 37	58 : 26	1 : 49
13	18 $\frac{1}{2}$	58 : 26	59 : 59	1 : 33
14	19	59 : 59	61 : 18	1 : 19
15	19 $\frac{1}{2}$	61 : 18	62 : 25	1 : 07
16	20	62 : 25	63 : 21	0 : 56
17	20 $\frac{1}{2}$	63 : 21	64 : 09	0 : 48
18	21	64 : 09	64 : 49	0 : 40
19	21 $\frac{1}{2}$	64 : 49	65 : 21	0 : 32
20	22	65 : 21	65 : 45	0 : 24
21	22 $\frac{1}{2}$	65 : 45	66 : 06	0 : 21
22	23	66 : 06	66 : 20	0 : 14
23	23 $\frac{1}{2}$	66 : 20	66 : 28	0 : 08
24	24	66 : 28	66 : 31	0 : 03

A Table of the Climates between the Polar Circles and the Poles.

Climate.	Longest Day.	Begins Latitude.	Ends Latitude.	Breadth.
25	1 Month	66 : 31	67° : 21'	0° : 50'
26	2	67 : 21	69 : 48	2 : 27
27	3	69 : 48	73 : 37	4 : 49
28	4	73 : 37	78 : 30	5 : 53
29	5	78 : 30	84 : 05	6 : 35
30	6	84 : 05	90 : 00	5 : 55

The

The terraqueous Globe, or Globe of the Earth and Water, is divided by Nature into Continents, Islands, Peninsulas, Isthmuses, Mountains, Promontories or Capes, Hills and Valleys; Oceans, Seas, Lakes, Gulphs or Bays, Straights, Ports or Harbours, and Rivers; Rocks, Shelves, Banks, Marshes and Bogs.

A Continent, called sometimes the Main-land, is a large Tract of Land, containing several contiguous Countries, Empires, Kingdoms, or States.

An Island is piece of Land wholly surrounded by the Ocean, Sea, or other Water, and divided from the Continent.

A Peninsula (that is to say, *almost an Island*) is a piece of Land encompassed by Water, except on one Side where it is joined to the Continent or other Land.

An Isthmus is that Neck or narrow piece of Land that joins a Peninsula to the Continent.

A Mountain is a part of the Earth, which is considerably higher or more elevated than other Lands near it.

A Promontory is a Mountain running out into the Sea, the Extremity of which is called a Cape or Headland.

A Hill is a lesser Kind of Mountain, and a Valley is that Land which is situate at the Bottom of a Mountain or Hill, or between two or more such.

The Ocean is a vast Body of Salt Water, which separates some of the Continents, and washes their Borders or Shores.

A Sea is a Branch of the Ocean flowing between some parts of the Continents, or separating Islands from them.

A Lake is a Body of Water every where surrounded by the Land

A Gulph or Bay is part of the Ocean or Sea contained between two Shores, and is encompassed by the Land except on one Side, where it communicates with the other Waters.

A Streight is a narrow Passage whereby Seas, Gulphs, and Bays communicate with the Ocean, or with one another.

A Port or Harbour is a part of the Ocean or Sea so inclosed by the Land, that Ships may ride in safety therein.

A River is a Running Water, descending in a narrow Channel from the Mountains of other high-lands, and emptying itself into some Ocean, Sea, Lake, or other River.

Rocks are great Stones; Shelves and Banks are Eminences consisting of Stones, Sands or other Matter which obstruct the Passage of Ships at Sea, and often prove fatal to those who do not keep clear of them.

Marshes are Lands lying low, which are liable to be over-flowed by the Sea or Rivers; and Bogs are Mixtures of Land and Water, over or among which it is dangerous to attempt a Passage.

The known Parts of the Earth are commonly divided into 4 Parts, viz. *Europe, Asia, Africa, and America*; the first three were known to the Ancients, and are for that Reason called the Old World: The fourth was discovered about 300 Years ago, and therefore called the New World.

The Lands which lie towards the North and South Poles are very little known; that towards the North Pole is called *Terra Artica*, and that towards the South Pole *Terra Antartica* or *Terra Australis incognita*; the latter is supposed, by some, to be nearly as big as *Europe, Asia, and Africa*.

The Ocean assumes different Names in different Parts of the Earth; and the Seas, Gulphs and Bays are named, mostly from the Lands to which they adjoin: It is thought therefore more convenient in this short Sketch, to describe the Land and Waters together; and first of

E U R O P E,

And the Adjacent Waters.

Europe is bounded on the North by the northern or frozen Ocean; on the West by the North Atlantic or western Ocean, which separates it from *America*; on the South by the Mediterranean Sea, separating it from *Africa*; and on the East, by *Asia*, to which it joins, without any visible Limit, towards the northern Parts; but on the southern the River *Tanais*, the *Palus Mæotis*, or *Sea Della Zabatche*, the Straights of *Cassa*, the *Euxine*, or *Black-Sea*, the Straights of *Constantinople*, the Sea of *Marmora*, the Straights of the *Dardanelli* and the *Archipelago*, serve to separate them.

The Dimensions of *Europe* may be partly conceived by the Measures following: *Constantinople*, the Capital of *Turkey*, (situate in Lat. 41° N. Longitude $28^{\circ} 58'$ E.) bears from Cape *St. Vincent*, the S. West Point of Land in *Portugal*, (situate in Lat. $36^{\circ} 41'$ N. Long. $8^{\circ} 12'$ W.) N. $81^{\circ} 48'$ E. being 178 Geographical Miles * distant therefrom.

Cape *Mala* the southern part of *Turkey* (in Lat. $37^{\circ} 20'$ N. Long. $24^{\circ} 07'$ E.) bears from the North Cape (in Lat. $71^{\circ} 27' 11''$ N. Long. $26^{\circ} 30'$ E.) S. $2^{\circ} 15'$ W. Distance 2058 Miles.

* Geographical Miles may be reduced to *English Miles*, by adding to their Number one sixth of the same, thus 1700 Geographical Miles are equal to 1700 and $28\frac{1}{3}$, or 1933 *English Miles*.

Europe contains the following Empires, Kingdoms, Regions or States, viz. *Spain, Portugal, France, Italy, Turkey, Great-Britain, the Netherlands, Germany, Hungary, Poland, Denmark, Sweden, and Muscovy.*

Of SPAIN and PORTUGAL.

Spain and *Portugal* are surrounded by the Sea on three Sides; on the South and South East by the *Mediterranean*, which communicates with the western or *Atlantic Ocean*, by the Streights of *Gibraltar*; on the West by the said Ocean; and on the North, by the same or a Part thereof, called the *Bay of Biscay*: On the North-east by the *Pyrenean Mountains*, (which reaching from the *Mediterranean* to the *Bay of Biscay*) separate it from *France*.

Portugal, is now a Kingdom, separate from *Spain*, to which it was heretofore subject: It is situate on the Ocean which washes on the West and South; it has *Gallicia* on the North, and borders upon *Leon, Old Castile, New Castile, and Andalusia*, on the West; it is hardly 300 Miles in Length from North to South, and about 100 in Breadth: The capital City is *Lisbon*, which was till lately in a ruinous Condition, having been almost destroyed by an Earthquake, and a Fire which succeeded it in *November 1755*. The City of *Oporto* is a Place of great Trade.

Most of the other Provinces of *Spain* were all formerly separate Kingdoms; such were *Andalusia*, in which *Gibraltar* is situated, as are the Cities of *Seville*, and *Cadiz*: *Granada* within the Streights, the principal City has the same Name; and on the *Mediterranean* are situated the Ports of *Malaga*, and *Almeria*; *Murcia*, more eastward in the *Mediterranean*, in which, besides a City of the same Name, is the City and Port of *Carthagena*: *Valencia*, North-eastward of *Murcia*; this has a City and Sea-port of the same Name, and another Port of great Trade called *Alicant*.

In the inland Parts are the Kingdoms of *Old-Castile, New-Castile, and Leon*; and near the Confines of *France*, those of *Arragon* and *Navarre*: The principal Cities of *Old-Castile*, are *Burgos*, and *Valadolid*; of *New-Castile*, *Madrid*, the King's Residence, and *Toledo*; of *Leon*, *Salamanca* and *Leon*; of *Arragon*, *Saragossa*; and of *Navarre*, *Pampelona* and *Estella*.

The Kingdom of *Gallicia* is situate on the Ocean in the North-West Part of *Spain*; its principal Cities are *Compostella*,

Stella, and *Corunna* on the *Groyne*, which is a Sea-port. The Principality of *Austurias* gives Title to the King of *Spain's* eldest Son ; it is situated eastward on the Bay of *Biscay* ; the principal City is called *Oviedo* ; the Province of *Biscay*, still more eastward, lies on the Bay of that Name, and has two Ports of Consequence, *Bilboa* and *St. Sebastian*.

Lastly, The Principality of *Catalonia* is situate on the *Mediterranean*, and is the most eastern Province of *Spain* ; in this is the City and Port *Barcelona*, which is not inferior to any of the above-named. Not far from which are the *Balearic Isles*, called *Majorca*, *Minorca*, and *Ivica*.

Proceeding eastward along the *Mediterranean Sea* is the Kingdom of *France*, which is bounded on the East by *Italy* and *Germany*, on the North by the *Netherlands* and the *English Channel*, on the West by the Sea of *Biscay*, and on the South by the *Pyrennees*, which separate it from *Spain*, and part of the *Mediterranean Sea*.

France consists of twelve Provinces : the southern are *Guienne* and *Gascony*, whose chief Town is *Bordeaux* ; *Languedoc*, whose Capital is *Thoulcuse* ; *Dauphine*, whose principal City is *Grenoble* ; and *Provence*, whose Capital is *Aix* ; this Province has two very considerable Sea-ports called *Toulon* and *Marseilles*.

More northerly are the Provinces of *Bretaigne*, *Orleanois*, *Burgoigne*, and *Lions* : whose Capitals, are *Rennes*, *Orleans*, *Dijon* and *Lions* ; and still more northward, are *Normandy*, the Isle of *France*, *Champaigne* and *Picardy*, *Rouen*, *Paris*, (the Capital of the Kingdom ;) *Troyes* and *Amiens*.

Although the Provinces of *France* have not the superb Title of Kingdoms, as those of *Spain* have, yet some of them are more extensive, rich and populous, than some of those Kingdoms.

Italy is divided from *France* on the West by the River *Var* and Part of the *Alps* ; from *Germany* on the North, by the same Mountains, called the *Alps* ; and is every where else surrounded by the *Mediterranean Sea*, and the Gulph of *Venice*, which is a Branch thereof.

This Country is divided into a great many Territories, governed in different Manners.

The Dukedom of *Savoy*, situated partly among the *Alps*, the Capital of which is *Chamberry* ; and the Principality of *Piedmont*, whose Capital is *Turin*, are subject to the Kings of *Sardinia*, the Duchies of *Milan* and *Mantua*, whose Capitals

pitals bear the same Name, are subject to the Queen of *Hungary*; the *Duchy of Munferrat*, whose Capital is called *Casal*, and those of *Parma* and *Modena*, having Capitals of the Name, are governed by their own Dukes; *Venice*, *Genoa*, *Lucca*, and *St. Mirino*, are the Capitals of four Republics, called by those Names; *Trent* is governed by its Bishop; *Rome* and its Dependencies by the Pope; the Grand *Duchy of Tuscany* (the Capital of which is *Florence*) is subject to the Brother of the present Emperor of *Germany*, and *Naples*, the Capital of a Kingdom, situate at the southern Extremity, together with the Island of *Sicily*, from which it is divided by a narrow Strait, are subject to the same King. The chief City of *Sicily* is called *Palermo*.

There are two other large Islands, *Sardinia* (whose Capital is *Cagliari*) subject to its King, and *Corfica*, (whose Capital is *Bastia*) at present subject to *France*; also a small one to the South of *Sicily*, called *Malta*, subject to the Knights of *Malta*.

More to the eastward is *Turkey* in *Europe*, which consists of many Provinces; *Constantinople* in the eastern Part thereof being the Residence of the Grand Signor, the Sovereign of this Empire.

The Names of those Provinces and their capital Cities follow.

Provinces.	Chief Cities.
<i>Dalmatia</i> ,	<i>Spalatro</i> ,
<i>Basnia</i> ,	<i>Belgrade</i> ,
<i>Servia</i> ,	<i>Semandria</i> ,
<i>Transylvania</i> ,	<i>Hermanflat</i> ,
<i>Wallachia</i> ,	<i>Tergowick</i> ,
<i>Moldavia</i> ,	<i>Saczow</i> ,
<i>Bulgaria</i> ,	<i>Sophia</i> ,
<i>Crim Tartary</i> ,	<i>Precop</i> ,
<i>Romania</i> ,	<i>Constantinople</i> ,
<i>Grecia</i> ,	<i>Saloniki</i> .

To these must be added the Islands on the *Archipelago*, which are very numerous.

Great-Britain is a large Island, having divers lesser ones dependent on it; it consisting some Years ago of two distinct Kingdoms (under one Sovereign) called *England* and *Scotland*; and, as this Work is published in the former of them, it is thought convenient to be more particular in the Description thereof, than we are with regard to other Countries; we shall therefore give the following.

Account of the several Counties of *England* and *Wales*,
with their Produce, Market-Towns, Market-Days,
&c.

Note, *m* stands for Monday, *tu* for Tuesday, *w* for Wednesday, *th* for Thursday, *f* for Friday, and *s* for Saturday.

Berkshire.

IS supposed to contain about 527,000 Acres, is 120 Miles
in Circumference, has plenty of Corn, Cattle, Wool,
and Wood, (especially Oak) and is accommodated with Water
Carriage, by the very fine Rivers of *Thames* and *Kennet*;
And bath these Market Towns, viz.

Reading, the Shire-Town, Market-Day on Saturday.

Abington, <i>m</i> and <i>f</i>	Newberry, <i>th</i>
Windſor, <i>f</i>	Farringdon, <i>tu</i>
Wallingford, <i>tu</i> , and <i>f</i>	Wantage, <i>f</i>
Maidenhead, <i>w</i>	East Ifley, <i>w</i>
Hungerford, <i>w</i>	Oakingham, <i>th</i>

Buckinghamshire.

Is an Inland County as well as *Berkshire*: it contains about 441,000 Acres, is 138 Miles in Circumference, abounds in Corn, Cattle, and is very considerable for Wool. The principal Rivers in this Shire are *Tame*, *Ouze*, & *Coln*.

Market Towns.

Buckingham, <i>f</i>	Cheſham, <i>w</i>
Aleſbury, <i>f</i>	Wendover, <i>th</i>
High-Wickham, <i>f</i>	Amersham, <i>tu</i>
Marlow, <i>f</i>	Newport-pagnel, <i>f</i>
Stoney-Stratford, <i>f</i>	Colebrook, <i>w</i>
Oundle, <i>m</i>	Risborough, <i>f</i>
Beaconfields, <i>th</i>	Invingho, <i>f</i>
	Winſlow, <i>tu</i>

Bedfordshire.

Contains about 260,000 Acres, is 73 Miles in Circumference, well ſtored with Corn and Cattle, and famous for Fuller's Earth, &c.

Market Towns.

Bedford, <i>th</i> and <i>f</i>	Luton, <i>m</i>
Dunſtable, <i>w</i>	Shefford, <i>f</i>
Wooburn, <i>f</i>	Biggleswade, <i>th</i>
Ampton Hill, <i>th</i>	Potton, <i>f</i>
Leighton, <i>m</i>	Tuddington, <i>f</i>

Cambridgeshire.

Is an inland County, contains about 570,000 Acres, is 130 Miles in Circumference, and affords Plenty of Corn, Cattle, and Wild Fowl. Cambridge is the Shire Town and

remarkable for a famous University, containing 12 Colleges and 4 Halls, all well endowed, and are as followeth, viz,
When

founded. COLLEGES.

By whom founded.

- 1248 Peter-House ---- by Huge de Bathom Bishop of Ely.
1346 Corpus Christi | by Henry of Monmouth, Duke of
or Bennet. | Lancaster.
1348 Gonvil an Caius, so called from its several Founders.
1441 King's-----by King Henry VI.
1448 Queen's,-----by Margaret his Queen
1497 Jesus-----by John Alcocke, L. L. D. Bishop
of Ely.

1506 Christ's-----by Margaret Countess of Richmond

1506 St. John's-----by ditto.

1542 Magadalen-----by Edw. Stafford D of Buckingham

1546 Trinity-----by King Henry VIII.

1584 Emanuel-----by Sir Walter Mildmay.

1598 Sidney Suffex----by Frances Sidney. Countess of
Suffex

1343 Clare-----by Richard Badew.

1347 Pembroke-----by Mary, Countess of Pembroke.

1353 Trinity-----by William Batemen, Bishop of
Norwich.

1540 Catherine-----by Robert Wood the Chancellor.

Market Town.

Cambridge, *f*

Ely, *tu*

Caxton, *tu*

Linton, *tb*

New-market, *tu*

Merche, *f*

Wisbech, *f*

Royston, *w*

Soham, *f*.

Cheshire.

Is a Maritime or Sea County, containing 720,000 Acres and is in circumference about 118 Miles. Cheese and Salt are the principal Commodities: For the first, no Place in the World equals it; and for the latter, was there but a sufficient Quantity, there would be no Occasion for Voyages to the Isle of Man.

Market Towns

Chester *w* and *f*

Congleton, *f*

Namptwich, *f*

Middlewich, *f*

Northwich, *f*

Macclesfield, *m*

Frodsham, *w*

Stockport, *f*

Sandwich, *tb*

Astringham, *tu*

Malpas, *m*

Knotsford, *f*

Cornwall,

Is a maritime County in the most Western Part of the Kingdom, consisting of about 960,000 Acres, and is 160 miles in Circumference. The chiefest Commodities are Tin & Copper particularly the former: it also affords great Plenty of Wild Fowl, especially Woodcocks in the Season: It also affords great Quantities of Samphire, Eringo, fine Slate and Marble; above all the rest, vast Quantities of Fish, which are yearly exported to France, Spain, and other foreign Countries.

Market Towns.

Launceston is the c. town <i>f</i>	Penryn, <i>w f</i> and <i>f</i>
Liskeard. <i>f</i>	Tregony, <i>f</i>
Lestwithiel, <i>f</i>	St. Ives, <i>w f</i>
Truro, <i>w</i> and <i>f</i>	Penzance, <i>th</i>
Bodmin, <i>f</i>	Fowey, <i>f</i>
Helston, <i>f</i>	St. German, <i>f</i>
Padstow, <i>f</i>	St. Columbe, <i>th</i>
Cahelford, <i>f</i>	Falmouth, <i>th</i>
Grampound. <i>f</i>	Market Jew, <i>th</i>

Cumberland.

Is also a Maritime County, bounded Northward with Scotland, and Westward with the Irish Sea; it contains about 1,040,000 Acres, and is in Circumference 163 Miles; it is a fruitful Country, affording good Pasture on the Hills and good Corn in the Vallies; Fish and wild Fowl are very plentiful, and Coals in Abundance; likewise large Mines of Lead and Copper, which are both very good in their Kind.

Market Towns.

Carlisle is the chief, <i>f</i>	Holm, <i>f</i>
Cockermouth, <i>tu</i>	Egremont, <i>f</i>
Whitehaven, <i>th</i>	Kirk Oswald, <i>th</i>
Penrith, <i>tu</i>	Longtown, <i>th</i>
Keswick, <i>f</i>	Ravenglass, <i>f</i>
Brampton, <i>th</i>	Wigtown, <i>tu</i> .

Derbyshire.

Is an Inland County, 120 Miles in Circumference, and contain about 680,000 Acres, affords good Store of Corn and Wood, likewise considerable Quantities of Free-stone and Marble, Coal and Lead-Mines in Abundance: also it yields Chrystal and Alabaster.

*Market Towns.*The County Town is Derby, *f*Chesterfield, *f*Wirksworth, *tu*Bolsover, *f*Ashburn, *f*Alfreton, *m*Bakewell, *m*Dronefield, *th*Fiddlewall, *rw**Devonshire.*

Is a Maritime County about two Hundred miles in circumference, and contains near 1,920,000 Acres; it lies on the West of England, and joins to Cornwall, having the sea on the North and the South; it affords great Plenty of Corn, Wool, Fowl and Fish, as also Lead and Tin Mines; but the principal Manufactures are Kerfies, Serges, and Lace.

*Market Towns.*Exeter is the Capital *rw & f*Barnstable, *f*Honington, *f*Oakhampton, *f*Plimpton, *f*Tavistock, *f*Axminster, *f*Culliton, *th*Dodbrook, *rw*Autrey, *tu*Tiverton, *tu*Plymouth, *m and tu*Totness, *f*Ashburton, *f*Biddeford, *tu*Torrington, *f*Cudee, *f*Hatherleo, *tu*Moreton, *f*Knightsbridge, *f**Dorsetshire.*

Is a County exceeding pleasant and fruitful, and lies upon the Channel, being one hundred and fifty miles in circumference, and contains about 772,000 Acres, yielding great plenty of Corn, Cattle, Wool, Fish, and Wild Fowl; and it also affords Abundance of Hemp, Free-stone, and Marble.

Market Towns.

Dorchester is the County-

Town *f*Weymouth, *tu and f*Melcomb-regis, *tu and f*Shaftsbury, *f*Pool, *m and tu*Wareham, *f*Corf-castle, *tu*Cranbourn, *rw*Blandford, *f*Abbotsbury, *th*Cerne, *rw*Frampton, *th*Sherborne, *tu and f*Wimbourn, *f*Sturminster, *th**Durham.*

Is a County Palatine, and lies very far in the North of the Kingdom, the air very cold, and the ground not so fruitful as in the Southern Parts. 'Tis 170 Miles in Cir-

cumference, and contains 610,000 Acres; its chief Commodities are Coal, Iron, and Lead.

Market Towns.

Durham is the principal, <i>f</i>	Sunderland, <i>f</i>
Aukland, <i>tb</i>	Bernards's Castle, <i>rw</i>
Darlington, <i>m</i>	

Essex.

Is a County bounded by the Sea, and lies in the Eastern part of England, 146 Miles in Circumference, and contains 1,240,000 Acres; the Soil yields plenty of Corn Cattle & Wood; at Walden it affords great plenty of Saffron; and the best in the World the Spanish being in no comparison to it.

Market Towns.

Chelmsford is the County-Town, <i>f</i>	Colchester, <i>f</i>
Harwich, <i>tu</i>	Barking, <i>f</i>
Malden, <i>f</i>	Hatfield, <i>f</i>
Walden, <i>f</i>	Rumford, <i>rw</i>
Epping, <i>tb</i> and <i>f</i>	Halstead, <i>f</i>
Braintree, <i>rw</i>	Hornden, <i>f</i>
Billericay, <i>tb</i>	Raleigh, <i>f</i>
Brentwood, <i>tb</i>	Manning-tree, <i>tu</i>
Dunmore, <i>f</i>	Waltham-Abbey, <i>tu</i>
Coggeshall, <i>f</i>	Troxtead, <i>f</i>
Graves, <i>tb</i>	Sudbury, <i>f</i>

Gloucestershire.

Is a County exceeding fruitful and delightful, and taken all together one of the pleasantest parts in the Kingdom: It contains about 800,000 Acres, affords some of the best Cheese in the Nation, and Wool hardly inferior to Spanish. It also abounds in Wood, Iron, Steel, and Salmon; but its chiefest Manufacture is the Woollen, which is very extraordinary.

Market Town.

Gloucester is the County-Town, <i>rw</i> and <i>f</i>	Lechdale, <i>tu</i>
Cirencester, <i>m</i> and <i>f</i>	Newent, <i>f</i>
Tewksbury, <i>f</i>	Sedbury, <i>tb</i>
Blackley, <i>rw</i>	Pauwic, <i>tu</i>
Dursley, <i>tb</i>	Stow, <i>tb</i>
Cambden, <i>rw</i>	Tedbury, <i>rw</i>
Newenham, <i>f</i>	Wickmore, <i>m</i>
Stroud, <i>f</i>	Thornbury, <i>f</i>
Cheltenham, <i>tb</i>	Winchomb, <i>f</i>
	Wotton, <i>f</i>

Hampshire.

Or the County of Southampton, borders upon the Channel, being a pleasant, healthful, and fruitful Country; about 100 Miles in Circumference, and contains about 1,312,500 Acres. It affords vast plenty of Corn, Grass, Sheep, and Wool, and particularly famous for Hogs and Honey, both of which are most excellent in their kind.

Market Town.

Southampton, the County-	Basingstoke, <i>w</i>
Town, <i>tu</i> and <i>f</i>	Kingclear, <i>tu</i>
Winchester, <i>w</i> and <i>f</i>	Ringwood, <i>w</i>
Portsmouth, <i>th</i> and <i>f</i>	Odiham, <i>f</i>
Annover, <i>f</i>	Rumsey, <i>f</i>
Lymington, <i>f</i>	Alceston, <i>th</i>
Alton, <i>f</i>	

To this County belongs the Isle of Wight, of a very considerable Extent, the principal Town Newport.

Hertfordshire.

Is a very fine inclosed County, the Land somewhat stony but yet very fruitful, affording great Plenty of Corn, and is very remarkable for good Malt; it is 130 Miles in Circuit, contains about 451,023 Acres, and hath an excellent air.

Market Towns.

Hertford is the County-	Buntingford, <i>m</i>
Towns, <i>f</i>	Baldock, <i>th</i>
St. Albans, <i>f</i>	Hitching, <i>th</i>
Barnet, <i>m</i>	Hodson, <i>th</i>
Ware, <i>tu</i>	Stevenage, <i>f</i>
Berkhamstead, <i>m</i>	Tring, <i>f</i>
Rickmansworth, <i>f</i>	Watford, <i>th</i>
Hatfield, <i>th</i>	Hempstead, <i>th</i>

Herefordshire.

Is an Inland County, of a good Soil, and healthful air, 100 Miles in Circuit, and contains about 660,000 Acres it affords plenty of Wood, Wheat, Salmon and Cyder, which are generally esteemed the best in the Kingdom.

Market Towns.

Hereford is the	Weobly, <i>th</i>	Pemb, <i>tu</i>
Capital, <i>wf.f.</i>	Kyniton, <i>w</i>	Ledbury, <i>tu</i>
Lempster. <i>f.</i>	Rofs, <i>th</i>	Bromyard, <i>m</i>

Huntingdon.

Is a small inland County of about 67 Miles in Circuit, & contains about two hundred and forty thousand Acres. It

is an open Country, but generally very fertile and delightful abounding in Corn, and Cattle, which are its chiefest Commodities.

Market Towns

Huntingdon the Chief, <i>f</i>	St Neots, <i>tb</i>
St. Ives, <i>m</i>	Ramsey, <i>w</i>
Kimbolton, <i>f</i>	Yaxley

Kent.

Is a Sea County on the East Part of the Channel; it is one hundred and sixty miles in Circumference, and contains about 1,248000 Acres, being distinguished into three parts, viz. the Marshy, as Romney Marsh, &c. the Downs and the Middle or Woody, Part. It affords plenty of Corn and good Pasture, and the best Cherries and Pippins in the kingdom.

Market Towns.

Canterbury, (famous for its Cathedral,) is the capital, <i>w</i> and <i>f</i>	Smarden, <i>f</i>	Lenham, <i>tu</i>
Rocheiter, <i>f</i>	Hithe, <i>f</i>	Lidd, <i>tb</i>
Maidston, <i>tb</i>	Bromley, <i>tb</i>	Seven Oaks, <i>f</i>
Dover, <i>w</i> and <i>f</i>	Cranebrook, <i>f</i>	Tenderden, <i>f</i>
Sandwich, <i>w</i> and <i>f</i>	Dartford, <i>f</i>	Malling, <i>f</i>
Romney, <i>tb</i>	Cray, <i>w</i>	Milton, <i>f</i>
	Eltham, <i>m</i>	Tunbridge, <i>f</i>
	Feverham, <i>w</i> & <i>f</i>	Welltram, <i>w</i>
	Folkstone, <i>tb</i>	Woolwich, <i>f</i>
	Gravesend, <i>w</i> & <i>f</i>	Wrotham, <i>tu</i>
		Wye, <i>tb</i>

Suffex.

Is a Maritime County, lying upon the Channel between Kent and Hampshire, containing 1,104,000 Acres, and is 158 Miles in Circumference. This county is both fertile and healthful, and is most exceeding pleasant; the South Downs being the most delectable or delightful part of the whole kingdom; and as I know them, I alledge them to have the most beautiful Variety, and the pleasantest prospect that can be in the whole culture of nature; the soil being exceeding rich, occasioned by the numerous Flocks of Sheep there kept; and therefore produce wonderful Crops of Corn of all Sorts; it hath also the finest Woods and Rivers, and affords the best Game for Hunting; Fishing and Fowling.

Market Towns.

Chichester is the chief, <i>w</i>	Midhurst, <i>tb</i>
and <i>f</i>	Steyning, <i>w</i>
East Grinstead, <i>tb</i>	Petworth, <i>w</i>
Hastings, <i>w</i> and <i>f</i>	Battle, <i>tb</i>
Rye, <i>w</i> and <i>f</i>	Hailsham, <i>f</i>
Holsham, <i>f</i>	Bright-Helmston <i>tb</i>
Arundel, <i>w</i> and <i>f</i>	Cuckfield, <i>f</i>

Lancashire.

Is a Sea-coast county, bounded on the East by the Irish sea, it is 170 miles in circuit, and contains 1,150,000 Acres: the air is very wholesome, and the people live to an advanced age: The Soil is very good, and yields corn of all sorts, particularly oats, which are looked upon as the best in the kingdom: It affords also plenty of Pit coal, and great Quantities of excellent Fish of all sorts.

Market Towns.

Lancaster is the	Ulverston, <i>tb</i>	Rochdale, <i>tu</i>
County-Town <i>f</i>	Bolton, <i>m</i>	Howstead, <i>m</i>
Chithero, <i>f</i>	Blackbourn	Hostington <i>w</i>
Liverpool, <i>f</i>	Cartmel <i>m</i>	Garistrong, <i>tu</i>
Preston, <i>m, f, & f.</i>	Bury, <i>tb</i>	Kirkham, <i>tu</i>
Wigan, <i>m</i>	Coln, <i>w</i>	Hornby, <i>m</i>
Manchester, <i>f</i>	Dalton, <i>f</i>	Omskirk, <i>tu</i>
Warrington <i>w & f</i>	Charnley <i>tu</i>	Prescot, <i>tu</i>

Leicestershire

Is a fine pleasant inland county, 96 Miles in circuit, contains about 560,000 Acres, abounds with Corn and good Pasture, and is very remarkable for Beans and Peas for Horses, which thrive there best of any County in *England*; it is also eminent for large Sheep, which produce Abundance of Wool and the longest in the Kingdom.

Market Towns.

Leicester is the County	Hinkley, <i>m</i>
Town, <i>m</i> and <i>f</i>	Lutterworth <i>tb</i>
Ashby-de-la-Zouch, <i>f</i>	Loughborough, <i>tb</i>
Botsworth, <i>w</i>	Melton, <i>tu</i>
Harborough <i>tu</i>	Mountforrel, <i>w</i> ,
Hallaton, <i>tb</i>	Waltham, <i>w</i> and <i>tb</i> .

Lincolnshire.

Is a Maritime County, Part bordering on the German sea and contains 1,740,000 Acres, being 130 Miles in circuit; The western Parts are good and fruitful, having plenty of

Grass, and breed the largest Oxen in the Kingdom, but the eastern parts are marshy, though well stored with wild Fowl.

Market Towns.

Lincoln is the Capital, <i>f</i>	Stanton, <i>m</i>	Wainfleet, <i>f</i>
Boston, <i>w</i> and <i>f</i>	Alford, <i>tu</i>	Dunnington, <i>f</i>
Grantham, <i>f</i>	Burton, <i>m</i>	Falkingham, <i>th</i>
Stamford, <i>m</i>	Barton, <i>m</i>	Sleaford, <i>m</i>
Grimby, <i>w</i>	Kirton, <i>f</i>	Holbeach, <i>th</i>
Gainsbrough, <i>tu</i>	Bourn, <i>f</i>	Horncastle, <i>f</i>
Bolinbrook, <i>tu</i>	Tatterhall, <i>f</i>	Louth, <i>w</i> and <i>f</i>
Spalding, <i>tu</i>	Brigg, <i>th</i>	Spilsby, <i>m</i>
	Market-Raifin, <i>tu</i>	Ragby, <i>th</i>

Middlesex.

Is the Metropolis of the Kingdom, and an Inland County, having the soil fertile by Improvement, and the Air sweet and wholesome as any in the Kingdom; the *Thames* parts it from the County of *Surry*, & is on most Accounts the finest River in the World.

Market Towns.

LONDON, the Metropolis, hath Markets for every Day in the Week.	Stains, <i>f</i>
Westminster, <i>m</i> , <i>w</i> , and <i>f</i>	Uxbridge, <i>th</i>
Brentford, <i>th</i>	Endfield, <i>f</i>
	Edgeworth, <i>th</i>

Monmouthshire.

Lies upon the Borders of *Wales*, was formerly reckoned a part of it, but is now numbered among the English Counties: It is accomodated by the famous River *Severn*, the second in the Kingdom; and contains 34,000 Acres, being 80 Miles in Circuit. This County is healthy, abounding with Corn, Cattle, Salmon and Trout.

Market Towns.

Monmouth, the principal, <i>f</i>	Caerleon, <i>tu</i>	Ponpool, <i>f</i>
Abergavenny, <i>tu</i>	Chepstow, <i>tu</i>	Uske, <i>m</i> and <i>f</i>
	Newport, <i>f</i>	

Norfolk.

Is a large County, bordering on the Northern Coast upon the German Sea: It is 180 Miles in Circuit, and contains 1,148,000 Acres. The Soil is different; in some places fertile, in others sandy, and in some deep and heavy. Its principal Commodities are Corn, Wool, Honey, and some Saffron; but chiefly Stuffs and Herrings, the

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first from *Norwich*, and the latter from *Yarmouth*. Sometimes Jet and Amber are found on the Sea Coast.

Norwich is the	Dereham, <i>f</i>	Caston, <i>tu</i>
Capital, <i>w</i> , <i>f</i> ,	Walsingham,	Comer, <i>f</i>
and <i>f</i>	Downham, <i>f</i>	Dis, <i>f</i>
Lynn, <i>tu</i> and <i>f</i>	Walsham, <i>w</i>	Harleston, <i>w</i>
Yarmouth, <i>f</i>	Windham, <i>f</i>	Herling, <i>tu</i>
Thetford, <i>f</i>	Ropeham, <i>f</i>	Holt, <i>f</i>
Attleborough, <i>tb</i>	Swaffham, <i>f</i>	Wotton, <i>w</i>
Alesham, <i>f</i>	Falkenham, <i>tb</i>	Worsted, <i>f</i>
Buckingham, <i>f</i>	Foulsham, <i>tb</i>	Seby, every second
Burnham, <i>f</i>	Hingham, <i>f</i>	Monday.

Northamptonshire

Is accounted one of the finest Inland Counties in the Kingdom; is 123 Miles in the Circuit, and contains about 550,000 Acres. The Air is good, and the Soil rich; hath several fine Rivers, and abounds in Corn, Wood, and Cattle.

Market Towns.

Northampton, the	Daventry, <i>w</i>	Kettering, <i>f</i>
County Town, <i>f</i>	Oundle, <i>f</i>	Wellingborough <i>w</i>
Peterborough, <i>f</i>	Towcester. <i>f</i>	Thrapstone, <i>tu</i>
Brackley, <i>w</i>	Rothwel, <i>m</i>	Cliff, <i>tu</i>

Northumberland

Is a Sea County, bordering upon *Scotland*; in some Part the Air is sharp, the Soil thin and barren; but towards the Sea it is tolerable fruitful. In this County are Abundance of Lead and Coal Mines, and from hence come the Coals called Sea-coals. Here are good Store of Wild-fowl, and Fish, particularly Salmon.

Market-Towns.

Newcastle is the chief	Morpeth, <i>w</i>
Town, <i>f</i>	Hexham, <i>tb</i>
Berwick, <i>f</i>	Wooler, <i>tu</i>

Nottinghamshire

Is an Inland County; in Circuit 110 Miles, and contains 560,000 Acres: The Air is good and healthful, the Soil but indifferent (a great part being forest Ground) the South Part pretty fruitful, the West woody, and yields plenty of Pit-coal. The River *Trent* divides it from *Lincolnshire*

Market Towns.

Nottingham, is the County-	Southwell, <i>f</i>
Town, <i>w</i> , <i>f</i> , and <i>f</i>	Bingham. <i>th</i>
Newark, <i>w</i>	Workfop, <i>w</i>
Retford, <i>f</i>	Tuxford in the Clay, <i>m</i>
Mansfield, <i>th</i>	Sutton-in-Ashfield, <i>f</i>

Oxfordshire

Is one of the most pleasant, healthful, and fertile Counties in the Kingdom ; it is watered with delightful Rivers, as the *Thames*, the beautiful *Charrald*, &c. but above all, it is famous for having the finest University in the World, which consists of 20 Colleges endowed, and five Halls not endowed, viz.

COLLEGES

By whom founded,

Anno.

872	University,	--	by the Saxon King Alfred.
1262	Baliol,	--	by John Baliol, King of Scotland.
1274	Merton,	--	by Walter de Merton, Bishop of Rochester.
1316	Exeter,	--	by Walter Stapleton, Bp. of Exeter.
1325	Oriel,	--	by King Edward II.
1340	Queen's,	--	by Robert Eglesford, B. D.
1375	New,	--	by William of Wickham, Bishop of Winchester.
1427	Lincoln,	--	by Richard Fleming, and Thomas Rotherham, Bishops of Lincoln.
1437	All Souls,	--	by Hen. Chichely, A. Bp. of Cant.
1459	Magdalen,	--	by William of Wainfleet, Bishop of Winchester.
1511	Brazen Nose,	--	by Wiliam Smith, Bp. of Lincoln, and Sir Richard Sutton, Knt.
1516	Corpus Christi		by Richard Fox. Bp. of Winchester.
1549	Christ Church,		by King Henry VIII.
1555	Trinity,	-	by Sir Thomas Pope.
1557	St. John's,	-	by Sir Thomas White, Lord Mayor of London.
1571	Jesus,	--	by Queen Elizabeth.
1609	Wadham,	--	by Nicholas Wadham, Esq ;
1620	Pembroke	--	by Thomas Tesdale, Esq ; and Richard Whitwick, B. D.
1700	Worcester,	--	by Sir Thomas Cooke.
1740	Hartford,	--	by Dr. Newton.

HALLS.

St. Edmund's	} belonging to	Queen's	} College.
St. Alban's		Merton	
St. Mary's		Oriel	
New-Inn		New	
Magdalen		Magdalen	

Market Towns in Oxfordshire.

Oxford the Capital, <i>w.</i> and <i>f.</i>	Henley, <i>ib</i>	Deddington <i>f</i>
Woodstock, <i>tu</i>	Watlington, <i>f</i>	Bicester, <i>f</i>
Badbury, <i>tu</i>	Whitney, <i>ib</i>	Bampton, <i>w</i>
Burford, <i>f</i>	Chipping-Norton, <i>f</i>	Tame, <i>tu</i>
		Charlbury

Rutland.

Is a small Inland county, forty miles in circumference, containing about 110,000 Acres; affords Plenty of Corn and Cattle; and is remarkable for the redness of the wool which the sheep of that country produce, occasioned by the colour of the soil.

Market Towns.

Oakhampton, <i>f</i>	Uppingham <i>w</i>
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Shropshire.

Is a plentiful inland county, the air good, and so is the soil. It is in circuit 134 Miles, containing about 190,000 Acres: and affords great plenty of corn, wood and pit-coal being accommodated by the river Severn.

Market Towns.

Shrewsbury, the County Town	Ludlow, <i>m</i>	Drayton, <i>w</i>
<i>w.</i> <i>ib</i> and <i>f</i>	Wenloch, <i>m</i>	Wem <i>ib</i>
Bishopscastle <i>f</i>	Elismere, <i>tu</i>	Church-streton <i>tu</i>
Bridgenorth <i>f</i>	Whitchurch, <i>f</i>	Ofwesty, <i>m</i>
	Newport, <i>f</i>	Shipton, <i>tu</i>

Somersetshire.

Is a large plentiful sea county in the West of England, in Circumference 204 Miles, containing about 907,500 Acres: It affords great plenty of excellent corn, and good pasture, which feeds abundance of fine cattle; and also yields plenty of Lead, Copper, Chrystal stones, and wood for Dyers. Its chief Manufactures are cloth and serges.

Market Towns.

Bristol is the capital, <i>w</i> and <i>f</i>	Southpetherton <i>tb</i>	Caneſham, <i>tb</i>
Bath, <i>w</i> and <i>f</i>	Axbridge, <i>tb</i>	Crookhorn, <i>f</i>
Wells, <i>w</i> and <i>f</i>	Shepton-Mallet, <i>f</i>	Dulverton <i>f</i>
Bridgewater, <i>tb</i>	Somerton, <i>m</i>	Glaſtenbury, <i>tu</i>
Ilcheſter, <i>w</i>	Wellington, <i>tu</i>	Chard, <i>m</i>
Taunton, <i>w</i> and <i>f</i>	Bruton, <i>f</i>	Longport, <i>f</i>
Winchanton, <i>w</i>	Ilminster, <i>f</i>	Pouſford, <i>tu</i>
Watchet, <i>f</i>	Dunſtan, <i>f</i>	Writon, <i>tu</i>
	Wivelcomb, <i>tu</i>	

Staffordſhire.

Is an inland county, containing about 810,000 Acres, and is 141 Miles in circuit, the air is ſharp, but very healthful; the Soil different: Northward it is hilly and barren, but the ſouthward is fruitful and pleaſant, and affords plenty of corn, graſs, iron and pit coal; the middle part is level, but ſometimes woody: This county alſo affords good ſtone marble, Alabaſter, and Lime-ſtone.

Market Towns.

Stafford is the County Town <i>f</i>	Uttoxeter, <i>w</i>	Betley, <i>tu</i>
Litchfield, <i>tu</i> & <i>f</i>	Eccleſham, <i>f</i>	Locke, <i>w</i>
Newcaſtle, <i>m</i>	Ridgley, <i>tu</i>	Tedbury, <i>tb</i>
Burton, <i>tb</i>	Bromley, <i>tu</i>	Stow, <i>tb</i>
Penbridge, <i>tu</i>	Breewood, <i>tu</i>	Wolverhampton, <i>w</i> .
	Walſhall, <i>tu</i>	

Suffolk.

Is a Sea county, 140 miles in compaſs, and contains 995,000 Acres; the Soil different; the beſt part about St. Edmundsbury; it affords Abundance of cattle, and butter of the beſt; but cheeſe the worſt in England.

Market Towns.

Ipſwich is the principal, <i>w</i> , <i>f</i> , and <i>f</i> .	Ixworth, <i>f</i>	Neeyland, <i>f</i>
Dunwich, <i>f</i>	Needham, <i>w</i>	Lavenham, <i>tu</i>
Orford, <i>m</i>	Stow-market, <i>tb</i>	Mildenhall, <i>f</i>
Aldborough, <i>f</i>	Newmarket, <i>tb</i>	Bildeſton, <i>w</i>
Sudbury, <i>f</i>	Beccles, <i>f</i>	Clare, <i>f</i>
Eye, <i>f</i>	Bury, <i>w</i>	Bungay, <i>tb</i>
Deddingham, <i>f</i>	Hadley, <i>m</i>	Holfworth, <i>tu</i>
	Framlington, <i>f</i>	Mendleſham <i>tu</i>
	Lelſtoff, <i>w</i>	Woodbridge <i>w</i>

Surry.

Is an inland County, parted by the River Thames from Middlesex: It contains about 592,000 Acres and is in compass 112 Miles. The country is plentiful, and the air healthful; it is famous for Hunting and Horse-racing; the principal Goods are Hats, made in Southwark for Exportation.

Market Towns.

Guildford is the	Southwark, <i>sw</i>	Kingston, <i>f</i>
County-town, <i>f</i>	and <i>f</i>	Croyden, <i>f</i>
Ryegate, <i>tu</i>	Dorking, <i>tb</i>	Farnham, <i>tb</i>

Warwickshire.

Is a pleasant, healthful and plentiful county, 155 miles in compass and contains about 670,000 Acres: The Soil for the most part is good and fertile; on the north a little woody. This county is remarkable for excellent cheese, going by its name.

Market Towns.

Warwick is the	Alcester, <i>tu</i>	Nuneaton, <i>f</i>
County-town <i>f</i>	Birmingham, <i>tb</i>	Rugley, <i>f</i>
Coventry, <i>f</i>	Colehill, <i>sw</i>	Southam, <i>m</i>
Stratford, <i>tb</i>	Henley, <i>m</i>	Sutton-Colefield, <i>f</i>
Atherstone, <i>tu</i>	Kineton, <i>tu</i>	

Westmoreland.

Is a county in the north-west of England: it is 120 miles in circuit, containing about 510,000 Acres. This county abounds in hills and marshes, and is not very Plentiful but in some of the vallies and intervals and towards the south.

Market Towns.

Appleby is the	Longdaie, <i>tb</i>	Kirby-steven, <i>f</i>
County-town <i>f</i>	Burton, <i>tu</i>	Orton, <i>sw</i>
Kendal, <i>f</i>	Ambleside, <i>sw</i>	Brough, <i>sw</i>

Wiltshire.

Is a fine inland county 140 miles in compass, and contains about 876,000 Acres; in the middle lies Salisbury plain very remarkable for its large extent; and for feeding large numbers of sheep; therefore wool is the principal commodity.

Market Towns,

Salisbury, the capital, <i>av</i> and <i>f</i>	Lavington, <i>av</i>	Calne, <i>tu</i>
Hindon <i>tb</i>	Watton-basset <i>tb</i>	Warminster, <i>f</i>
Chippenham, <i>f</i>	Crickdale, <i>f</i>	Bradford, <i>m</i>
Wilton, <i>av</i>	Devizes, <i>tb</i>	Amisbury, <i>f</i>
Marlborough, <i>f</i>	Downton, <i>f</i>	Auburn, <i>tu</i>
Malmesbury, <i>f</i>	Wexbury, <i>f</i>	Swindon, <i>m</i>
	Highworth, <i>av</i>	Trowbridge, <i>f</i>

Worcestershire

'Tis a plentiful inland county; 130 miles in circuit, and contains 540,000 Acres: The soil is for the most part good and fertile; affords corn in great plenty, and is very numerous in cattle: it yields plenty of fish and fruit. The vale of Evesham is justly esteemed one of the most fertile spots in the kingdom.

Market Towns,

Worcester is the capital, <i>av, f, f</i>	Droitwich, <i>f</i>	Pershore, <i>tu</i>
Evesham <i>m</i>	Stourbridge, <i>f</i>	Tidbury, <i>tu</i>
Bewdley, <i>f</i>	Kidderminster, <i>tb</i>	Upton <i>tb</i>
	Bromsgrove, <i>tu</i>	Shipton, <i>f</i>

Yorkshire.

Is a Maritime county, and much the largest in all England, and is divided into three parts, called Ridings, viz. North, East, and West: 'Tis in general a plentiful county abounding in corn, cattle, fish, and fowl, and famous for breeding fine saddle horses. It is 320 miles in circumference, and contains 3,770,000 Acres; it sends great quantities of woollen cloth to London, and elsewhere, being its chief manufacture.

York is the capital; Market-days Thursday and Saturday; with 36 other market-towns, too numerous here to mention.



The Principality of Wales.

WALES was originally independant on England, but in the Reign of King Henry the VIIth, it was incorporated with it. This country is very mountainous and bar-

ren, except in the valleys and intervals, where it yields plenty of grafs and corn. The fituation is weftward, bordering on the Irish Sea; the air bleak and fharp, but wholefome, the cattle are numerous, but very fmall; and on the hills are goats in abundance. This county is divided into north and fouth.

North Wales.

Contains Anglefey, Carnarvonfhire, Denbighfhire, Flintfhire, Merionethfhire, and Montgomeryfhire.

Anglefey is an Ifland in the North-weft part of the country, about eighty miles in compafs, and contains about 200,000 Acres. It affords plenty of corn, cattle, fifh, fowl and mill-ftones, (for grinding corn) in abundance: It has but two market-towns, viz. Beaumaris, and Newborough; Wednesday is the market-day of the firft, and Tuesday of the latter.

Carnarvonfhire is a Sea-coaft county, 110 miles in compafs containing about 340,000 Acres. It hath plenty of corn, cattle, fifh and wood; the air is healthful, and the foil good, efpecially the weftern part, which produce abundance of excellent barley.

Market Town..

Carnarvon is the chief, <i>f</i>	Polbel, <i>w</i>
Bangor, <i>w</i>	Aberconways, <i>f</i>
Krobich, <i>w</i>	Newin, <i>f</i>

Denbighfhire is 116 miles in Circuit, and contains about 410,000 Acres. The middle of this county hath plenty of rye, coals and fheep; it hath alfo fome fmall lead mines; but the chief part of it is a valley valled Diffryn Cluid, exceeding pleafant and fertile, adorned with feveral Gentlemen's Seats, and thofe of good eftates, Denbigh is the county town, and the market-day on Wednesday. Wrexham is another of its principal market-towns, a pretty town, and famous for its market, neat church, and lofty fteeple.

Flintfhire contains about 160,000 Acres, and is in circuit 82 miles. It hath but three towns, viz. Fliat, St Afaph, and Gairus: the firft fo fmall that it hath no market. 'Tis a hilly country, but the vales are very fertile, and the inhabitants commonly live to a great age. Its commodities are fmall cattle, butter, cheefe, pit-coal, lead, and mill-ftones. In this county is Winifred's well, fo famous for curing achs, lameneffs, and as fome fay propagation.

Merionethshire is 180 miles in circuit, and contains 500,000 Acres. The country in general is mountainous, but yet not without plenty of small cattle and other necessaries for the inhabitants. The chief manufacture is cotton-work. The principal town is Harlech, which hath a pretty good market on Saturdays.

Montgomeryshire, is in compass 94 miles, and contains 560,000 Acres. 'Tis fruitful, though mountainous, and hath six small market-towns, but no manufactures worth notice.

South Wales.

Contains **Brecknockshire**, **Cardiganshire**, **Carmarthenshire**, **Glamorganshire**, **Pembrokeshire**, and **Radnorshire**.

Brecknockshire is 106 miles in circuit and contains about 620,000 Acres, divided into hills and valleys; the first but barren, but the latter very plentiful, wholesome and pleasant.—**Brecknock** is the chief town, and hath a good trade for cloathing; it has two good markets in a week, viz Wednesdays and Saturdays: The commodities are cattle, fish, and some small quantities of Otter's Fur.

Cardiganshire is 94 miles in compass and contains about 520,000 Acres. It is situated on the banks of the Irish sea, and hath plenty of corn, cattle, fish, fowl, &c. Of late years it is become remarkable for its silver, copper and lead mines.

Carmarthenshire is one of the most plentiful counties in Wales, the air good, and the soil fertile. It affords plenty of corn, cattle, salmon, wood, pit-coal, and the best lead. 'Tis 120 miles in compass, containing about 700,000 Acres.

Glamorganshire is a very fine plentiful county; in the south part, it is so fruitful, that it is called the garden of Wales.—It is 112 miles in circuit, and contains about 540,000 Acres.—**Cardiff** is the county-town which keeps two market-days weekly, viz. Wednesday and Saturday.

Pembrokeshire, is a very pleasant and plentiful county, for the most part surrounded by the sea. It is ninety-three miles in compass, and contains about 520,200 Acres. This county is famous for a harbour called Milford Haven, which is justly esteemed to be in all respects one of the best in the world.

Pembroke is the principal town, whose market is kept on Saturday.

Radnorshire, is one of the most barren and unfruitful

counties in all Wales. It is in circuit 99 miles, and contains about 310,000 Acres. The assizes are usually kept at Prestain but Radnor is the Shire Town, and hath a tolerable market upon Saturday, and Prestain hath another on Wednesday.

SCOTLAND.

Is situated to the North of England; the capital is called Edinburgh, it is divided into the following Shires or Counties.

To the South of the Firth of Forth.	}	Galloway,	Chief Towns.	}	Kircudbright,
		Nithsdale,			Dumfries,
		Annandale,			Annan,
		Esdale with Unsdale,			Hermitage,
		Lidsdale,			Jedburgh,
		Tiviotdale,			Dunse,
		The Mers,			Lauder,
		Lauderdale			Peebles,
		Tweedale,			Glasgow
		Clyddesdal,			Air,
		Keyle			Bargenny,
		Carrick			Edinburgh,
		Lothian,			Stirling,
		Stirling,			Renfrew,
		Renfrew,			Irwin,
		Cunningham,			Rothsay,
		Isles of Bute and Arran,			Kilkerran,
		Peninsul of Cantire.			



To the North of the Firth of Forth

Fife,
Monteith
Lenox,
Argyle,
Perth,
Strathern,
Brodalbain,
Lorn,
Merns,
Angus,
Goury,
Athol,
Mar,
Badenoch
Lochabar
Buchan,
Bam,
Murray,
Ross,
Sutherland,
Strathnaver,
Caithness,

Chief Towns.

St. Andrews,
Dumblain,
Dumbarton,
Inveraray
Perth,
Abernethy,

Dunstaffnage,
Bervay,
Dundee,

Blair,
Aberdeen,
Ruthven,
Innellochay
Peterhead
Bamf,
Elgin,
Tayne
Dornoch,
Strathy
Wick.

To these may be added the Hebrides or Western Isles, said to be above 300 in Number, the most considerable of which are Arran, Sky, and Mull; and the Isles of Orkney and Shetland, to the Northward of each of which, there are many in Number.

Ireland.

Is a large Island to the West of *England* and *Scotland*, the chief City of which is *Dublin*; it is divided into 4 Provinces which are again subdivided into the following Counties.

Leinster.

Louth,
Dublin,
Wicklow
Wexford
Longford
Meath
King's County
Queen's County
Kilkenny
Kildare,
Caterlough,

Chief Towns.

Drogneda
Dublin
Wicklow
Wexford
Longford
Mullingar
Phillipstown
Maryborough
Kilkenny
Kildare,
Carlow

Ulster.	{	Down	{	Chief Towns	Down
		Armagh			Armagh
		Monaghan			Monaghan
		Cavan			Cavan
		Antrim			Carrickfergus
		Londonderry			Londonderry
		Tyrone			Dungannon
Connaught.	{	Fermanagh	{	ch. Towns	Inniskillen
		Donegal			Donegal
		Leitrim			Leitrim
		Roscommon			Athlone
		Galway			Galway
Munster.	{	Mayo		{	Mayo
		Sligo			Sligo
		Tipperary			Clonmel
		Waterford			Waterford
		Clare			Clare
	{	Limerick		{	Limerick
		Cork			Cork
		Kerry			Dingle

In St. George's Channel, almost equally distant from England, Scotland, and Ireland, is situated the Isle of Man, the Royalty of which, under the Kings of Great Britain, was formerly held by the Stanleys, Earls of Derby; the Male-issue of that Family being extinct, it was enjoyed by the Duke of Athol, descended from the Derby Family by a female Branch, till the Session of Parliament 1765, when it was annexed to the Crown.

The *Britannic* Isles above described, are separated from France, on the South by the *English* Channel; and from the *Netherlands*, *Germany*, *Denmark*, and *Norway*, by the *German* Ocean on the East; the Northern and Western Sides, being washed by the Ocean so called,

The *Netherlands* have *Germany* on the East and North, the *German* Ocean to the West, and *France* on the South; they consist of seventeen Provinces; of which seven compose a Republic, called the *United Provinces*; and the remaining ten are subject to the House of *Austria*.

The 7 *United Provinces* are inhabited by the *Dutch*, and are commonly called *Holland*, after the Name of the most considerable of them: The Names of the Provinces and their Capitals follows.

Provinces.	{	Holland	}	chief Towns.	{	Amsterdam
		Zeland				Middieburgh
		Utretcht				Utretcht
		Gelderland				Zatphen
		Over Iffel				Deventer
		Friesland				Lewerden
		Groningen				Groningen.

The 10 Provinces are now commonly called the *Austrian Netherlands*, or *Flanders*, from the Name of one of them; the Names of the Provinces and their Capitals follow:

Provinces.	{	Guelderland	}	Chief Towns.	{	Gelders
		Brabant				Brussels
		Luxemburgh				Luxemburgh
		Limburgh				Limburgh.
		Flanders				Bruges
		Artois				Arras
		Hainault				Mons
		Namur				Namur
		The Marquisate of the Empire				Antwerp
		Malines.				Malines.

The Empire of *Germany* has on the East-side *Prussia*, *Poland*, and *Hungary*; the *Baltic Sea*, *Denmark*, and the *German Ocean* on the North; the *Netherlands* and Part of *France* on the West; and the *Alps* which separates it from *Italy* on the South.

This country is a large Republic, whose chief Officer is called the Emperor; he is elected by 9 of the most considerable Princes, thence called Electors their Names and principal cities follow;

Electors.	{	The Archbishop of Mentz,	}	chief Towns.	{	Mentz
		The Archbishop of Triers,				Triers
		The Archbishop of Cologne,				Cologne
		The Queen of Bohemia				Prague
		The King of Prussia as Marquis of Brandenburg,				Berlin
		The Duke Saxony				Dresden
		The King of Great-Britain as Duke of Brunswick-Lunenburg.				Hanover.
		The Duke of Bavaria,				Manich
		The count Palatine of the Rhine.				Manheim.

There are great numbers of other Dominions in Germany but for Brevity Sake, we shall mention only.

The Archduchy of Austria;	} <i>CH. TOWNS.</i> }	Vienna
The Landgrave of Hesse-castle,		Cassel.
The Duchy of Wirtemburgh		Stutgard
Alsace, now subject to the French,		Stralburgh

There are in Germany several free cities, which are so many small commonwealths under the protection of the Germanic body, such as Ratibon, Francfort, Hamburgh, &c. And among the Alps are other small commonwealths, commonly known by the names of the Swiss-cantons, the principal of which are Zurick, Bern, Bazil, and Freeburgh, with these are confederated the republic of Geneva, and the leagues of the Grisons, all situate among those mountains.

The Kingdom of Hungary hath Poland on the North, Germany on the West, and on the other sides the Turkish Empire; the chief city is called Buda; other considerable cities are Presburgh, Raab, Zygeth, Canisia, Alba-Regalis Gran, Strygonium, Pest, Temeswaer, &c. all famous in History on account of the contentions between the Christians and Turks, for the Sovereignty of this Kingdom.

It is at present under the Dominion of Maria Theresa, Daughter of the late Emperor Charles the Sixth, who is Queen of Hungary and Bohemia, Archduchess of Austria, &c. and was married to Francis, the late Emperor of Germany great Duke of Tuscany, &c.

Poland is a large elective Kingdom, bounded on the East by Crim-Tartary and Muscovy; on the North by part of Muscovy and the Baltic Sea, on the West by Germany, and on the South by Hungary and Part of Turkey; the capital city is called Warsaw.

Denmark and Norway, two Kingdoms, under the same Sovereign are bounded on the North and West by the Ocean, on the South by Part of Germany and the Baltic Sea and on the East by Sweden; the capital of Denmark is called Copenhagen, and that of Norway, Bergen.

Sweden hath Denmark on the West, the Baltic Sea on the South, Muscovy on the East, and the Ocean on the North; the chief city is called Stockholm.

Muscovy, or Russia, hath part of Sweden and the Baltic Sea on the West, Poland and Crim-Tartary on the South; Great-Tartary in Asia on the East and the Ocean on the

North; the ancient capital is called Moscow; but the Residence of the court is now generally at Petersburg on the Baltic Sea. This empire is very extensive, being near as big as all the rest of Europe.

Asia is separated from Europe towards the north-west by the Boundaries above described, towards the south-west by the Eastern part of the Mediterranean, and by the isthmus of Suez and the Red-Sea, which divide it from Africa; it is bounded on the South by the Indian Ocean; on the East by the Pacific, and on the North by the Northern or Frozen Ocean; its Dimensions may be conceived from what follows: Holy Cape, on the Northern Ocean, in Lat. 72, 32 N. Long. 179; 45 E. bears from the Eastern point of Java, one of the Indian islands, in Lat. 8 30 S Long. 115 55 E. N. 28; 45 E. Distance 5540 miles. And Cave Ava, in the island of Japan, in the Pacific Ocean, Lat. 34. 45 N. Long. 141: 00 E. bears from Smyrna, in the Archipelago, Lat. 38: 28 North Long. 27: 25 E. S. 87. 48 E. S. 87. 48 E. distance 5550 Miles.

It seems most regular to divide this large country according to its present possessors, the Grand Signior or Emperor of the Turks, the Sophy or King of Persia, the Great Mogul, and the other Potentates of India, the Emperor of China, and the Potentates of Tartary.

The Turks possessions in Asia, are Anatolia, Syria, Arabia, Armenia, or Turcomania, Georgia, Mesopotamia, or Diarbeck; of which in their order.

Anatolia, formerly called Asia-Minor, is encompassed on the North; West, and South Sides, by the the Euxine, the Marmarian, the Archipelago, and the Mediterranean Seas: it is separated from Syria on the South East by the Mountains called Taurus, and from Tarcomania on the East by the river Euphrates.

Its present subdivisions are said to be four, Anatolia Proper on the North-West, its capital city, Bursa; Amasia; on the North-East, having a capital of the same Name; Caramania on the South-west, its capital Cogni; and Aladuli on the South-East; its capital Maraz.

Syria, called by the Turks Suristan, is generally subdivided into Syria Proper, Phœnicia, and Palestine or Judæa; whose chief cities are Aleppo, Damascus and Jerusalem.

Arabia (a country which preserves its ancient name, as do the inhabitants their roaming Disposition) is bounded on the West by the Red sea and isthmus of Suez; on the North by Palestine, Syria, and Diarbeck; on the East by the

Persian Gulph, and on the south-west by the Arabian sea, a part of the Indian Ocean.

It is divided into three parts, called the Desert, the stony, and the Happy; the two first lie to the northward the other to the south.

There are very few towns in the Desert or stony parts of this country, the Arabs living in tents, and removing with their families from place to place as profit or convenience suggest. But in Arabia the Happy (one of the finest countries in the world) there are several of note, such as Medina, where the sepulchre of *Mahomet*, the founder of the Turkish Religion, is; Mecca, his birth-place, to which every Turk or Musselman is obliged by that Religion to come in pilgrimage once in his life-time, or to send another in his stead; Aden, a place of traffic; Sana, Mocha, Soar, and others.

Armenia or Turcomania is bounded on the west by Anatolia, on the south by Diarbeck, on the east and north by Georgia and the Euxine sea; its principal cities are Arzerum, Chars, and Van.

Georgia, formerly called Iberia, including Mingrelia and Gurgestan, is bounded on the north by part of Muscovy, on the west by the Euxine sea, on the south by Turcomania, and part of Persia, and on the east by part of Persia; the cities of the greatest note are Fasso and Teflis.

Mesopotamia or Diarbeck is bounded on the north by Turcomania, on the west by Syria, on the south by Arabia the Desert, and on the east by Persia; its principal cities are Diarbekir, Mossoul, and Bagdat.

Besides these large possessions on the continent of Asia, the Turks hold several islands in the Archipelago; with Rhodes and Cyprus in the Mediterranean sea, the last of which is very considerable.

The next division of Asia, proceeding Eastwardly, is Persia, which has the Turkish Dominions on the West, the Persian Gulph and part of the Indian Ocean on the South, the empire of the Great *Mogul* on the East, and, on the North, part of Tartary, the Caspian sea, and part of the Muscovian empire.

This is a very large country, but at present torn to pieces by different Competitors for the Sovereign Power; the capital city is Ispahan; the most considerable of the others are Derbent on the Caspian sea, and Gombroon and Bassora on the Persian Gulph.

Proceeding

Proceeding still eastward, the next Empire is that of the Great *Mogul*, which has Persia on the West, the two Indian peninsulas and the Bay of Bengal on the South, China on the East, and part of Tartary on the North.

This is another large tract, with the inland parts of which the Europeans are not much acquainted.

The principal cities are Agra, Lahor, Delhi, Cabul, and Caximir, but whether Agra, or Lahor is the capital, is difficult to determine, as Authors do not agree concerning it; it is agreed, however, that the *Mogul* hath a magnificent palace at each of those cities.

The maritime parts of the continent of India are divided by the bay of Bengal, a branch of the Indian Ocean, into two peninsulas, anciently called India, within or on this side the Ganges and India, without or beyond the Ganges; besides which two peninsulas, there are several large islands belonging to India, of which in their order.

The Peninsula on this side the Ganges, contains several distinct territories or kindoms, most of which either are or were subject, or at least tributary, to the *Mogul*; the western side thereof is called the coast of Malabar, the eastern the coast of Coromandel.

The coast of Malabar, contains several European settlements; such as Bombay, an island belonging to the English East-India Company, and Goa, to the Portuguese, at each of which they have the Sovereignty; and the English trade at least, if they have not forts, at Guzurat, Surat, Calicut, and Cochin.

The island call'd Ceilen or Ceylon, by some called Ze-loan, is situated a little to the East of cape Comorin, the most Southern point of this peninsula.

The coast of Coromandel, which is washed by the bay of Bengal, tends towards the N. and N E. from cape Comorin, and extends to the mouth of the Ganges; the principal settlements of the English on this coast are, Madrafs or Port St. George, and Fort St. David, near which the French have a settlement called Pondicherry; which neighbouring settlements were for several years at war with each other, with various success, the Natives, headed by their Princes, called Nabobs, having taken part therein, some on one side and some on the other; but the English were at last victorious, and have lately had large provinces yielded to them by the Princes of the country.

The peninsula on the other side of the Ganges consists of the large kingdoms of Bengal, having a capital of the same name; Pegu, whose chief cities are Pegu and Arracan; Siam, having a capital of the same name; Malacca, situate to the South, is almost encompassed by the sea, and the city, so called, is situate near the Southern extremity; Cochin-china, whose city is name Cambodia, and Tunquin, whose capital is of the same name.

South-west of Malacca is the island of Sumatra.

South-east of this lies the island of Java, separated by the straits of Sunda; the western point of which is called Java Head by English Mariners, it being often the first land made by them after they have doubled the cape of Good-Hope; the principal cities are Bantam and Batavia, the latter of which belongs to the Dutch East India Company, who are Sovereigns (or, if not, yet act as such) over the greatest part of this large and fruitful island.

Eastward from Malacca and Sumatra is the island Borneo almost round, and near 600 miles in diameter.

The island Celebes is to the East of Borneo, and much less than it. Proceeding eastward are the Molucca or Spice-Islands; the Dutch have made themselves masters of these, and thereby ingross the spice trade to themselves.

The Phillipine isles are very numerous, some Authors have reckoned 10,000 of them; the most considerable, is Luconia, whose capital is Manilla.

To the North and North-west of these is situated the potent empire of China, reckoned to be as big as all Europe; it hath the Pacific Ocean on the East and South-east; Cochin-China, and Tonquin on the South-west; the *Mogul's* empire on the West, and on the North-west and North a part of Tartary.

There are a great number of cities in this empire, of which Pekin, situated in the Northern part of the country, is the capital; the European trade to this country is chiefly carried on at Canton, a great sea-port in one of the Southern provinces.

The most extensive Chinese islands are those which compose the empire of Japan; which consists of several large islands, 3 of which are very considerable *viz.* Japan or Nippon whose capital is Meaco; Tonsu, whose capital is Sanuqui; and Bongo, whose capital bears the same name.

Thus we have taken a cursory survey of all the Southern parts of Asia; the Northern hath only one general name, *viz.* Tartary, which has Persia, India, and China, on the

South and the Pacific Ocean on the East, the Northern or Frozen Ocean on the North, and Muscovy on the West; this tract is subject to divers Potentates, some of whom are very little known.

Africa is a large peninsula which is joined to the continent of Asia, by the isthmus of Suez, a narrow Desert between the Mediterranean and Red seas; its magnitude may be conceived by knowing that the cape of Good-Hope in Lat. 34 Degrees 15 Min. South Long. 20. 7 Min. E. bears from Ceuta in Lat. 35 Deg. 45 Min. N. Long. 4 Deg. 42 Min. W. S. 18 Deg. 15 Min. E. Distance 4440 Miles; and that Cape Guardafuy, in Lat. 11 Deg. 48 Min. N. Long, 50 Deg. 25 Min. E. bears from Cape Sierra Leone, in Lat. 8 Deg. 30 Min. N. Long 12 Deg. 7 Min. W. N. 87 Deg. 00 E. Distance 3700 Miles.

Very little of the inland parts of this continent are known to the Europeans; so that only the sea-coasts will be mentioned here, beginning at the isthmus of Suez, and coasting first the Mediterranean sea.

Egypt is under the Dominion of the Turks, its present capital is called Cairo; the piratical states of Tripoly; Tunis, and Algiers, have capitals of the same name, and the capital of the empire of Morocco is the city of Fez.

Along the coasts of the Atlantic Ocean, there are no extensive dominions, the inhabitants being mostly subject to petty Princes of their own, who being almost continually at war with one another, sell their prisoners for slaves: The European nations have been induced, for the protection of their trade therein, and other commodities, to erect several small forts in different places, to enumerate which would be tedious: The Madeiras, the Canaries, and the Cape de Verd islands, are the most considerable on this coast; the only one possessed by the English is a very small one, called St. Helena, frequented by the East-India ships.

At the southern extremity of the continent is situated the Cape of Good-Hope, where the Dutch East-India Company have built a tolerable town for the convenience of their shipping; from hence again, along the Eastern coast, both on the Ocean and in the Red Sea, very little that is remarkable offers itself.

At some distance, however, from that part of this coast which is washed by this ocean, is situated one of the largest islands in the world, called Madagascar, which has been at different times the asylum of the European pirates.

America, by some called the New World, because discovered about 274 years ago, being, before that time unknown to the inhabitants of Europe, Asia, and Africa, is divided into two remarkable divisions, called North and South America, which are joined together by the isthmus of Darien or Panama.

The sea-coast of North America, and part of the inland countries, are at present subject to the European nations: the French possess Canada or new France, whose capital city is Quebec, * situate on the Great River St. Lawrence, which running behind the English settlements, has given them the opportunity of extending themselves far up into the country, and becoming very troublesome neighbours to the English: Newfoundland, a large island, near the mouth of this river, belong to the English, and Cape Breton \$, a much smaller, but well fortified, to the French.

The English possess a large tract of the sea-coast of the Atlantic Ocean, for Charles-Town in South Carolina, Lat. 33 22 N. Longitude 79 50 W. bears from Cape Causo, in Nova Scotia, Lat. 45 10 N. Long 49 50 W. S 52 English Miles to a degrees, make 1345 English miles: which making Allowance for the windings of the coast, may be very well considered to be really more than 1500 English miles. The names of their plantations or Settlements, with their chief towns, follow:

Nova-Scotia,	} Chief-Towns.	Halifax,
New-England,		Boston,
New-York,		New-York,
Pensylvania,		Philadelphia,
New-Jersey, East,		Elizabeth-Town,
New-Jersey, West,		Elfsingburg,
Maryland,		Baltimore,
Virginia,		James-Town,
North-Carolina,		Edenton,
South-Carolina,		Charles-Town,
Georgia,		Savannah.

The English possess the Sea-coast of Florida, the next southern Country, the principal settlements therein being St Augustine, the French had some settlements to the West

* Quebec, was taken from the French during the late glorious War, and is now in the Possession of the English.

of these along the River Mississippi, which empties itself into the Gulph of Mexico, the principal is Fort Louis, from whence the country is called Louisiana; but have lately exchanged them with Spain for the Island of Hispaniola, which they were before in Possession of but a Part.

More to the south-west is the Empire of Mexico and its dependants, having a Capital of the same Name, subject to Spaniards; this country extends itself westward to the Pacific Ocean, and the Spaniards send Ships yearly from Acapulco, a port therein, across the ocean, to the Phillipine Isles in the East Indies.

Northward on the Pacific Ocean, is New-Mexico, and the Island of California; but of these we know but little.

The Continent of South-America consist of the following large districts:

Terra-Firma, Golden Castile Guiana, Peru, Chili, Patagonia, Terra del Fuego, La Plata, Brazil, Paraguay, Amazonia,	} Chief Towns.	Panama,	} In the Possession of the	Spaniards,
		Carthagena, Surinam, Lima, St. Jago,		Spaniards, Dutch, Spaniards, Spaniards, Natives, Natives, Spaniards, Portuguese, Jesuits, Natives.
		Buenos Aires, St. Salvador, Assumption,		

N. B. Terra del Fuego is an Island separated from Patagonia, by the Straits of Magellan.

The Gulph of Mexico, Juchatan, Honduras, and the Caribbean-Sea, are separated from the Atlantic Ocean by a great Number of Islands called the Bahama, the greater and lesser Antilles, and Caribbee-Islands. The Names of the most considerable are as follow.



Cuba,	Havnanah,	Spaniards,
Hispaniola, or	St. Domingo,	French,
St. Domingo,	Kingston,	English,
Jamaica,	Port-Royal,	Spaniards,
Porto Rico,	Port-Rico	English,
Anguilla,		English,
Bermuda,		English,
St. Christopher's		English,
Nevis,		English,
Antigua,		English,
Monferrat,		English,
Barbadoes,	Bridge Town,	English,
Gadaloupe,		French,
Martinico,		French,
St. Martin,		English,
St. Cruz,		French,
St. Lucia,		French,

Chief Towns,

In the Possession of the

The islands called Bermudas, lying about 500 leagues East of Florida, are subject to the English.

ASTRONOMY.

ASTRONOMY is a science which treats of the motions and distances of the heavenly Bodies, and of the Appearance thence arising.

There have been a great variety of opinions, among the Philosophers of the preceeding ages, concerning the disposition of the great Bodies of the Universe, or of the position of the Bodies which appear in the Heavens: But the notion now embraced by the most judicious Astronomers is, that the Universe is composed of an infinite number of Systems or Worlds; that in every System there are certain Bodies moving in free space and revolving at different distances around a Sun, placed in or near the centre of the system; and that these Suns, or other bodies, are the Stars which are seen in the Heavens.

That System, in which our Earth is placed, is by Astronomers, called the *Solar System*; and that opinion, which supposes the Sun to be fixed, in or near the centre, with several Bodies revolving him, at different distances, is confirmed by all the observations hitherto made.

This opinion is also called the *Copernican System*; from Nicholas Copernicus, a Polish Philosopher, who about the

year, 1474. revived this notion from the oblivion it had been buried in for many ages.

The Sun therefore is placed in the midst of an immense space, wherein six opaque spherical Bodies revolve about him as their centre.

Those wandering globes are called the Planets, who at different periods, perform their revolutions, from West to East, in the following order.

I. *Mercury* is nearest to the Sun of all the planets, & performs its course in about three months, or 87 days 23 hours.

II. *Venus*, in about seven months and a half or 224 days, 17 hours.

III. The *Earth*, in a year, 365 days 6 hours.

IV. *Mars*, in about two years, or 686 days, 23 hours.

V. *Jupiter*, in 12 twelve years, or 4232 days, 12 hours.

VI. And lastly, *Saturn*, whose \dagger Orbit includes all the rest, spends almost thirty years, that is 10759 days, 8 hours, in one revolution round the Sun. The distance of the planets from the Sun are nearly in the following proportion, viz. supposing the distance of the Earth from the Sun to be divided into 10000 equal parts; that of Mercury will be about 387 of those parts; of Venus 724; of Jupiter 5201; and that of Saturn 9538.

The orbits of the planets are not all in the same plane, but variously incline to one another; so that, supposing the orbit of the Earth to be the standard, the others will have one half above, and the other half below it; intersecting one another in a line passing through the Sun.

The plane of the Earth's Orbit is called the *Ecliptic*; and this the Astronomers make the standard, to which the planes of the other orbits are judged to incline.

The right line passing through the Sun, and the common intersection of the plane of the orbit of any planet with the *Ecliptic*, is called the *Line of the Nodes* of that planet, and the points themselves, wherein the orbit cuts the *Ecliptic*, are called *Nodes*.

As the inclinations of the orbits of the planets to the plane of the *Ecliptic*, are as follows, viz. the orbit of Mercury makes an angle of 6 Deg. 52 Min.; that of Venus 3 Deg. 23 Min.; of Mars 1 Deg. 52 Min.; of Jupiter 1 Deg. 20

\dagger By the Orbit of a Planet, is commonly understood the Track or Ring, described by its Centre round the Sun; but, by the Plane of the Orbit, is meant a flat surface, extended every way through the Orbit infinitely.

Min. ; and of Saturn 2 Deg. 20 Min. The orbits of the planets are not circles, but Ellipses or ovals.

What an Ellipsis is, may be easily known from the following description ; imagine two small pegs fixed upright on any plane, and suppose them tied with the ends of a thread, somewhat longer than their Distance from one another ; now if a pin be placed in the Double of the thread and turned quite round (always stretching the thread with the same force) the curve described by the Motion will be an Ellipsis. The two points where the Pegs stood, about which the Thread was turned are called the Focuses or Foci of that Ellipsis ; and if, without changing the length of the thread, we alter the position of the pegs, we shall then have an Ellipsis of a different kind from the former ; and the nearer the Focuses are together, the nearer will the curve described be to the circle, until at last the two Focuses coincide, and then the pin in the doubling of the Thread will describe a perfect circle.

The orbits of all the planets have the Sun in one of their Focuses, and half the Distance between the two Focuses is called the Excentricity of the Orbits. This Excentricity is different in the planets, but in most of them it is so small, that in little Schemes or Instruments, made to represent the planetary orbits, it need not be considered.

If, as before, we suppose the mean Distance of the earth from the Sun to be divided into 1000 parts ; then will the Excentricity of Mercury be 81 of those parts ; that of Venus 5 ; and that of the Earth, 17 ; that of Mars, 141 ; that of Jupiter, 240 ; and that of Saturn, 543 of the same parts,

The six planets above-mentioned, are called Primaries, or primary Planets ; but, besides these, there are ten other lesser Planets ; which are called secondaries, Moons, or Satellites. These moons always accompany their respective Primaries, and perform their Revolutions round them, whilst both together are also carried round the sun.

Of the six primary planets, there are but three, as far as Observation can assure us, that have these Attendants, viz. the Earth, Jupiter and Saturn.

The Earth is attended by the Moon, who performs its Revolution in about 29 Days and a Half, at the distance of about 30 diameters of the earth from it ; and once a year is carried round the sun along with the Earth.

Jupiter has four Moons or Satellites ; the first or inmost performs its Revolution in about one day and 18 hours and a half at the distance of 5 and a Half Semidiameters of Ju-

piter from his centre; the second revolves about Jupiter in 3 days and 13 hours, at the distance of 9 of his Semidiameters; the Third in 7 days and 4 hours, at the Distance of 14 one third Semidiameters; the fourth and outermost performs its course in the space of 16 days 18 hours, and its distance from Jupiter's centre is 25 one third of his Semidiameters.

Saturn has no less than five Satellites; the first or innermost revolves about him in 1 day and 21 hours, at the distance of 4 three eights diameter of Saturn from his center; the second completes his period in 2 days and three fourths at the Distance of 5 Diameters and $\frac{2}{3}$; the third, in about 4 days one second, at the Distance of 8 diameters; the fourth performs his course in about 16 days, at the Distance of 8 diameters; the fifth and outermost takes 79 days 8 hours to finish his course, and his 54 diameters of Saturn distant from the center. The Satellites, as well as the Primaries, perform their revolutions from West to East; the plane of the orbit of their primary.

Besides these attendants, Saturn is encompassed with a thin ring, that does no where touch his body; the Diameter ring is to the Diameter of Saturn, as 9 to 4; and the void space between the ring and the body of Saturn, is equal to the breadth of the ring itself; so that in some situations, the heaven may be seen between the ring and his body.

This surprising phenomenon of Saturn's ring is a modern discovery; neither were the Satellites of Jupiter and Saturn known to Ancients; the jovial Planets were first discovered by the famous Italian Philosopher, Galilæus, by a Telescope, which he first invented; and the celebrated *Cassini*, the French King's Astronomer, was the first that saw all the Satellites of Saturn; which by reason of their great distances, from the sun, and the smallness of their own bodies, cannot be seen by us, but by the help of very good glasses.

The motion of the primary planets round the sun (as also of the Satellites round their respective Primaries) is called their annual motion; because they have one year, or the alterations of the Seasons, complete, in one of those revolutions. Besides their annual motion, four of the planets viz. Venus, the Earth, Mars, and Jupiter, revolve about their own axis, from west to east; and this is called their diurnal motion. For by this Rotation, each point of their surfaces is carried successively towards, or from the sun, who always illuminates the Hemisphere which is next to him,

the other remaining obscure : And while any place in the Hemisphere is illuminated by the sun, it is day; but when it is carried to the obscure Hemisphere it becomes night ; and so continues until, by this Rotation, the said place is again enlightened by the sun.

The earth performs its revolution round its Axis in twenty three hours 56 minutes ; Venus in 23 hours ; Mars in about 24 hours and 40 minutes ; and Jupiter moves round his own axis in 9 hours and 56 minutes.

The sun is also found to turn round his Axis from West to East in twenty-seven days ; and the moon which is nearest to us of the Planets, revolves about her Axis in a month, or in the space of time that she turns round the earth ; so that the Lunarians have but one day throughout their year.

The planets are all opaque bodies, having no light but what they borrow from the sun ; for that side of them, which is next towards the sun, has always been observed to be illuminated, in what position soever they be ; but the opposite side, which the solar rays do not reach, remains dark and obscure ; whence it is evident that they have no light but what proceeds from the sun, for if they had, all parts of them would be lucid, without any darkness or shadow. The planets are likewise proved to be globular, because, let what part soever of them be turned towards the sun, its boundary, or the line separating that part from the opposite, always appears to be circular, which could not happen if they were not globular.

The earth is placed betwixt the orbs of Mars and Venus; and Mercury, Mars, Venus, Jupiter and Saturn, do all turn round the sun ; both which may be proved from observations as follows :

1. Whenever Venus is in conjunction with the Sun, that is, when she is in the same direction from the earth, or towards the same part of the heavens the sun is in ; she either appears with a bright and round face, like a full moon, or else disappears ; or, if she is visible, she appears horned like a new moon ; which phenomena could never happen, if Venus did not turn round the sun, and was not betwixt him and the earth : for since all the planets borrow their light from the sun, it is necessary that Venus's lucid face should be towards the sun ; and when she appears fully illuminated she shews the same face to the sun and the earth, whence, at that time, she must be above or beyond the sun ; for, in no other position could her illuminated face be seen from the earth. Farther when she disappears, or if visible, appears

horned; that face of hers, which is towards the sun, is either wholly turned from the earth, or only a small part of it can be seen by the earth; and in this case she must of necessity be betwixt us and the sun.

Besides the foregoing there is another argument to prove that Venus turns round the sun in an orbit that is within the earth's; because she is always observed to keep near the sun, and in the same quarter of the heavens that he is in, never receding from him more than about $\frac{1}{2}$ of a whole circle; and therefore she can never come in opposition to him, which would necessarily happen, did she perform her course round the earth either in a longer or shorter time than a year.

And this is the reason why Venus is never to be seen near midnight, but always either in the morning or evening, and at most not above three or four hours before sun-rising, and after sun-setting from the time of Venus's superior conjunction, or when she is above the sun, she is more easterly than the sun, and therefore sets later, and is seen after sun-setting; and then she is commonly called the evening star; but from the time of her inferior conjunction, till she comes again to the superior, she then appears more westerly than the sun, is only to be seen in the morning before sun-rising, and is then called the morning star.

After the same manner we prove that Mercury turns round the sun, for he always keeps in the sun's neighbourhood, and never recedes from him so far as Venus does; & therefore the orbit of Mercury must lie within that of Venus, and, on account of his nearness to the sun, he can seldom be seen without a telescope.

Mars is observed to come in opposition, and likewise to have all other aspects with the sun, he always preserves a round, full and bright face, except when he is near his quadrature aspect, when he appears somewhat gibbous, like the moon three or four days before or after the full: Therefore the orbits of Mars must include the earth within it; and also the sun; for if he was betwixt the sun and us at the time of his inferior conjunction, he would either quite disappear, or appear horned, as Venus, and the moon do, in that position.

Mars, when he is in opposition to the sun looks almost seven times larger in diameter, than when he is in conjunction with him; and therefore, must needs be almost seven

times nearer to us, in one position, than in the other : For the apparent magnitudes of distant objects increase or decrease, in proportion to their distance from us ; but Mars keeps always, nearly, at the same distance from the sun, therefore it is plain, that it is not the earth but the sun that is the center of the motion.

It is proved in the same way, that Jupiter and Saturn have both the sun and earth within their orbits ; and that the sun, and not the earth, is the centre of their motions : although the disproportion of the distances from the earth is not so great in Jupiter as in Mars, nor so great in Saturn as it is in Jupiter, by reason that they are at a much great distance from the sun.

We have now shewn that all the planets turn round the sun, and that Mercury and Venus are included between him and the earth, whence they are called the inferior planets : and that the earth is placed between the orbits of Mars, and Venus, and therefore included within the orbits of Mars, Jupiter and Saturn, whence they are called the superior planets : And since the earth is in the middle of these moveable bodies, and is of the same nature with them we may conclude, that she has the same sort of motions ;-- but that she turns round the sun is proved thus :

All the planets seem from the earth to appear to move very equally ; as sometimes to go faster, at other times slower, and sometimes to be stationary, or not to move at all ; which could not happen if the earth stood still.

The annual periods of the planets round the sun are determined ; by carefully observing the length of time since their departure from a certain point to the heavens (or from a fixed Star) until they arrived at the same again. By these sorts of observations, the ancients determined the periodical revolutions of the planets round the sun ; and were so exact in their computations, as to be capable of predicting eclipses of the sun and moon : But since the invention of Telescopes, astronomical observations are made with greater accuracy, and of consequence our tables are far more perfect than those of the ancients.

And, in order to be as exact as possible, Astronomers compare observations made at a great distance of time from one another, including several periods ; by which means

the error that might be in the whole, is in each subdivided into such little parts, as to be very inconsiderable. Thus the mean length of a solar year, is known even to seconds.

The diurnal rotation of the planets round their Axis was discovered by certain spots which appear on their surfaces: These spots appear first on the margin of the planets disks (or the edge of their surfaces) and seem by degrees to creep towards their middle; and so on, going still forward, till they come to the opposite side or edge of the disk, where they set or disappear; and after they have been hid for the same space of time that they were visible, they again appear to rise, in or near the same place as they did at first, then to creep on progressively, taking the same course as they did before. These spots have been observed on the surfaces of the sun, Venus, Mars, and Jupiter, by which it has been found, that these bodies turn round their own axis, in the time before mentioned.

It is very probable, that Mercury and Saturn have likewise a motion round their axis, that all the parts of their surfaces may alternately enjoy the light and heat of the sun; and receive such changes as are proper and convenient for their nature; but by reason of the nearness of Mercury to the sun, and Saturn's immense distance from him, no observation has hitherto been made, whereby their spots (if they have any) could be discovered: and therefore the diurnal motion of the earth is concluded to exist from the apparent revolution of the heavens, and of all the stars round it, in the space of a natural day. For it is much easier to conceive, that this, comparatively small globe, should turn round its own axis once in twenty-four hours, than that such a great number of much larger bodies, some of them so immensely distant, should revolve round it in so short a space of time. The solar spots do not always remain the same, but sometimes old ones vanish, and afterwards, others succeed in their room; sometimes several small ones gather together, and make one large spot, and sometimes a large spot is seen to be divided into many small ones. But notwithstanding these changes, they all turn round with the sun in the same time.

Each planet is always observed to pass through the constellations, Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricornus, Aquarius, Pisces, and it also appears that every one has a track peculiar to it.

self; whereby the paths of the six planets form, among the stars, a kind of road, which is called the Zodiac; the middle part whereof, called the Ecliptic, is the orbit described by the earth, with which the orbits of the other planets are compared.

As the ecliptic runs through twelve constellations, it is supposed to be divided into twelve equal parts, of thirty degrees each, called signs, having the same name with the twelve constellations they run through.

The plane of the ecliptic is supposed to divide the celestial sphere into two equal Parts, called the northern and southern Hemispheres; and a body situated in either of these hemispheres, is said to have north or south latitude according to the hemisphere it is in: So that the latitude of a celestial object is its nearest distance from the ecliptic.

The planes of the other five orbits are observed to lie partly in the northern and partly in the southern hemisphere; so that every one cuts the ecliptic in two opposite points called nodes; one, called the ascending node, is that through which the planet passes, when it moves out of the southern into the northern hemisphere; and the other, called the descending node, is that through which the planet must pass, in going out of the northern into the southern hemisphere.

The right line joining the two nodes of any planet is called the line of the nodes.

The names of most of the constellations were given by the ancient astronomers, who reckoned that star in Aries, now marked γ (according to Bayor) to be the first mark in the ecliptic, this for being next to the sun, when he entered the vernal equinox; and at that time each constellation was in the sign by which it was called; but observations shew, that the point marked in the heavens by the vernal equinox, has been constantly going backwards, by a small quantity every year; whereby the stars appear to have advanced as much forwards, so that the constellation Aries is now almost removed into the sign Taurus, the said first Star in Aries being got almost thirty degrees forwards from the equinox: which difference is called the procession of the equinoxes, whereof the yearly alteration is about fifty seconds of a degree, or about a degree in 72 years.

All the planets have one common focus, in which the sun is placed ; for as no other supposition can solve all the appearances that are observed in the motion of the planets, and as it also agrees with the strictest physical and mathematical reasoning ; therefore it is now received as an elementary principle.

The line of the nodes of every planet passes through the sun ; for as the motion of every planet is in a plane passing through the sun, consequently the intersections of those planes, that is, the lines of the nodes must also pass through the sun.

All the planets in their revolutions are sometimes nearer, sometimes farther from the sun ; this is a consequence of the sun not being placed in the centre of each orbit, the orbits being ellipses.

The Aphelion, or superior Apfis, in that point of the orbit which is farthest distant from the sun : And the Perihelion, or inferior Apfis, is that point which is nearest the sun ; And the transverse diameter of the orbit, or the line joining the two Apfes is called the line of the Apfes, or Apfides.

The planets move faster as they approach the sun, or come nearer the Perihelion, and slower as they recede from the sun, or come nearer the Aphelion ; this is not only a consequence from the nature of the planets motions about the sun, but is confirmed by all good observations.

If a right line be drawn from the sun, through any planet, (which Line is called by some the Vector Radius) and supposed to revolve round the sun with the planet, then this line will describe, or pass through every part of the plane of the Orbit, so that the Vector or Radius may be said to describe the area of the Orbit.

There are two chief laws observed in the Solar System, which regulate the motion of all the planets ; namely

I. The planets describe equal Areas in equal times ; that is in equal portions of time the Vector Radius describes the equal areas or portions of the space contained within the planet's Orbit.

II. The squares of the perodical times of the planets, are as the cubes of the mean distance from the sun : That is, as the square of the time which the planet *A*, takes to revolve in its orbit, is to the square of time taken by any o-

other planet *B*, to run through its orbit ; so is the cube of the mean distance of *A* from the sun, to the cube of the mean distance of *B* from the sun.

The mean distance of a planet from the sun is its distance from him, when the planet is at either extreimity of the conjugate diameter, and is equal to half of the transverse diameter.

The foregoing laws are the two famous laws of Kepler, a great Astronomer, who flourished in Germany about the beginning of the 17th century, and who deducted them from a multitude of observations: But the first, who demonstrated these laws, was the incomparable Sir ISAAC NEWTON.

By the second law, the relative distances of the planets from the sun are known ; and was the real distance of any one known, the absolute distances of all the other would thereby be obtained.

Besides the planets, already mentioned, there are other great bodies; that sometimes visit our system, which are a sort of temporary planets? for they come and abide with us for a while, and afterwards withdraw from us for a certain space of time, after which they again return. These wandring bodies are called comets.

The motions of the comets in the heavens, according to the best observations hitherto made, seem to be regulated by the same immutable law with the planets ; for their orbits are elliptical, like those of the planets, but narrower or more excentric. Yet they have not all the same direction with the planets, who move from west to east ; for some of the comets move from east to west ; and their orbits have different Inclinations to the Earth's orbit ; some inclining northwardly, others southwardly, much more than any of the planetary orbits do.

Although both the comets and the planets move in elliptic Orbits, yet their motions seem to be vastly different; for the excentricities of the planets orbits are so small, that they differ but little from circles ; but the excentricities of the comets are so very great, that the motions of some of them seem to be almost in right lines, tending directly towards the sun.

Now since the orbit of the comets are so extremely excentric, their motions when they are in their periheli, or nearest distance from the sun, must be much swifter, than when they are in their aphelia, or farther distance from him;

which is the reason why the comet make so short a stay in our system, and, when they disappear, are so long in returning.

The figures of the comets are observed to be very different; some of them send forth small beams, like hair, every way round them: others are seen with a long fiery tail, which is always opposite to the sun. Their magnitudes are also very different, but in what proportion they exceed each other, is as yet uncertain. Nor is it probable that their numbers are yet known, for they have not been observed with due care, nor their theories discovered, but of late years. The ancients were divided in their opinions concerning them; some imagined that they were only a kind of Meteors, kindled in our atmosphere, and where there again dissipated; others took them to be some ominous prodigies; but modern discoveries prove that they are worlds, subject to the same laws of motion as the planets are: and they must be very hard and durable bodies else they could not bear the vast heat with some of them, when in their perihela, receive from the sun, without being utterly consumed. The great comet, which appeared in the year 1680, was within one-sixth part of the sun's diameter from his surface; and therefore its heat must be prodigiously intense, beyond imagination: And when it is at its greatest distance from the sun, the cold must be as rigid.

The fixed stars are those bright and shining bodies, which in a clear night, appear to us every where dispersed through the boundless regions of space. They are termed fixed, because they are found to keep the same immutable distance, in all ages, without having the motion, observed in the planets. The fixed stars are all placed at such immense distances from us, that the best telescopes represent them no bigger than points, without having any apparent diameters.

It is evident from hence, that all the stars are luminous bodies, and shine with their own proper & native light, else they could not be seen at such a great distance. For the Satellites of Jupiter and Saturn, though they appear under considerable angles through good telescopes, yet are altogether invisible to the naked eye.

Although the distance betwixt us and the Sun is vastly large, when compared to the diameter of the Earth, yet it is nothing when compared to the prodigious distance of the fixed stars; for the whole diameter of the Earth's annual orbit, appears from the nearest fixed star, no bigger than a

point, and the fixed are at least 100,000 times farther from us than we are from the Sun; as may be demonstrated from the observations of those who have endeavoured to find the Parallax of the Earth's annual Orbit, or the angle under which the Earth's orbit appears from the fixed stars.

Hence it follows, that though we approach nearer to some fixed stars at one time of the year than we do at the opposite, and that by the whole length of the diameter of the Earth's orbit; yet this distance, being so small in comparison with the distance of the fixed stars, their magnitudes or positions cannot thereby be sensibly altered. Therefore we may always without error suppose ourselves to be in the same centre of the Heavens, since we have always the same visible prospect of the stars without any alteration,

If a spectator was placed as near to any fixed star, as we are to the Sun, he would there observe a body as big, and every way like, as the Sun appears to us; and our Sun would appear to him no bigger than a fixed star, and undoubtedly he would reckon the Sun as one of them, in numbering the stars.—Wherefore since the Sun differeth in nothing from a fixed star, the fixed stars may be reckoned as so many Suns.

It is not reasonable to suppose that all the fixed stars are placed at the same distance from us; but it is more probable that they are every where interspersed, through the vast indefinite space of the universe; and that there may be as great a distance betwixt any two of them as there is betwixt our Sun and the nearest fixed star. Hence it follows, why they appear to us of different magnitudes, not because they really are so but because they are at different distances from us; those that are nearest excelling in brightness and lustre, those that are more remote, give a fainter light, and appear smaller to the eye.

The Astronomers distribute the stars into several orders or classes; those that are nearest to us, and appear brightest to the eye, are called stars of the first magnitude; those that are nearest to them in brightness and lustre, are called stars of the second magnitude; those of the third class are stars of the third magnitude; and so on, until we come to the stars of the sixth magnitude, which are the smallest that can be seen through telescopes; but these are not reduced to any of the six orders, and are only called telescopic stars. It may be here observed, that though the Astronomers have reduced all the stars, that are visible to the naked eye, in-

to some one or other of these classes ; yet we are not to conclude from thence that all the stars answer exactly to some or other of these orders ; but there may be in reality as many orders of the stars as they are in number, few of them appearing of the same bigness and lustre.

The ancient Astronomers, that they might distinguish the stars in regard to their situation and position to each other, divided the whole starry firmament into several Asterisms or system of stars, consisting of those that are near to one another. These Asterisms are called Constellations, and are digested into the forms of some animals, as Men, Lions, Bears, Serpents, &c. or to the images of known things, as of a Crown, a Harp, a Triangle, &c.

The starry firmament was divided by the ancients into 48 images or constellations ; twelve of which they placed in that part of the Heavens wherein are the planes of the planetary orbits ; which part is called the Zodiac, because some of the constellations, placed therein, resemble some strong creature. The two regions of the Heavens on each side of the Zodiac, are called the North and South parts of the Heavens.

The constellations within the Zodiac are, 1. Aries, the Ram ; 2. Taurus, the Bull ; 3. Gemini, the Twins ; 4. Cancer, the Crab ; 5. Leo, the Lion ; 6. Virgo, the Virgin ; 7. Libra, the Balance ; 8. Scorpio, the Scorpion ; 9. Sagittarius, the Archer ; 10. Capricornus, the Goats ; 11. Aquarius, the Water-bearer ; and, 12. Pisces, the Fishes.

The constellations on the North-side of the Zodiac are thirty-six, *viz.* the Little Bear, the Great Bear, the Dragon, Cæpheus, a King of Ethiopia ; the Greyhounds ; Bootes ; the Keeper of the Bear ; Mons Menelaus ; Bernice's Hair ; Charle's Heart ; the Northern Crown ; Hercules with his Club watching the Dragon ; Cerberus, the Harp ; the Swan ; the Fox ; the Goose ; the Lizard ; Cassiopeia ; Perseus ; Andromeda ; the Great Triangle ; Auriga ; Pegasus or the Flying Horse ; the Dolphin ; the Arrow ; the Eagle ; Serpentarius ; the Serpent ; Sobieski's Shield ; Camelopardus ; Antinous ; the Colt ; the Lynx ; the Little Lion ; and Musca.

The constellations noted by the Ancients on the South side of the Zodiac, where the Whale, the River Eridanus, the Hare, Orion, the Great Dog, Little Dog, the Ship Argo, Hydra, the Centaur, the Cup, the Crow, the Wolf

the Altar, the Southern Crow and the Southern Fish. To these have been lately added the following, *viz.* The Phoenix, the Crane, the Peacock, Noah's Dove, the Indian, the Bird of Paradise, Charles's Oak, the Southern Triangle, the Fly or Bee, the Swallow, the Camelion, the Flying Fish, Teucan or the American Goose, the Water Serpent, and the Sword Fish.

The ancients placed these particular constellations or figures in the Heavens, either to commemorate the Deeds of some great Man, or of some notable Exploit or Action; or else took them from the Fables of their Religion, &c. and the modern Astronomers do still retain them, to avoid the Confusion that would arise by making new ones, when they compare the modern observations with the old ones.

Some of the principal stars have particular names given them, as Syrius, Arcturus, &c. There are also several stars that are not reduced into constellations, and these are called unformed stars.

Besides the stars visible to the naked eye, there is a very remarkable space in the Heavens, called the Galaxy or Milky Way: This is a broad circle of a whitish hue, like milk going quite round the whole Heavens, and consisting of an infinite number of small stars, visible through a telescope, though not discernible by the naked Eye, by reason of their exceeding faintness; yet, with their light, they combine to illustrate that part of the Heavens where they are, and to cause that shining whiteness.

The places of the fixed stars, or their relative situations one from another, have been carefully observed by Astronomers; and digested into a catalogues. The first among the Greeks, who reduced the stars into a catalogue, was Hipparchus, who from his own observations, and of those who lived before him, inserted 1022 stars into his catalogue has been since enlarged and improved, by several learned men to the number of 3000, of which there are a great many telescopical, & not to be discerned by the naked eye; & these are all ranked in the catalogue as stars of the seventh magnitude.

It may seem strange to some, that there are no more than this number of stars visible to the naked eye; for sometimes, in a clear night, they seem to be innumerable. But this is only a deception of our sight, arising from their vehemently sparkling, while we look upon them confusedly, without reducing them to order; for there can seldom be

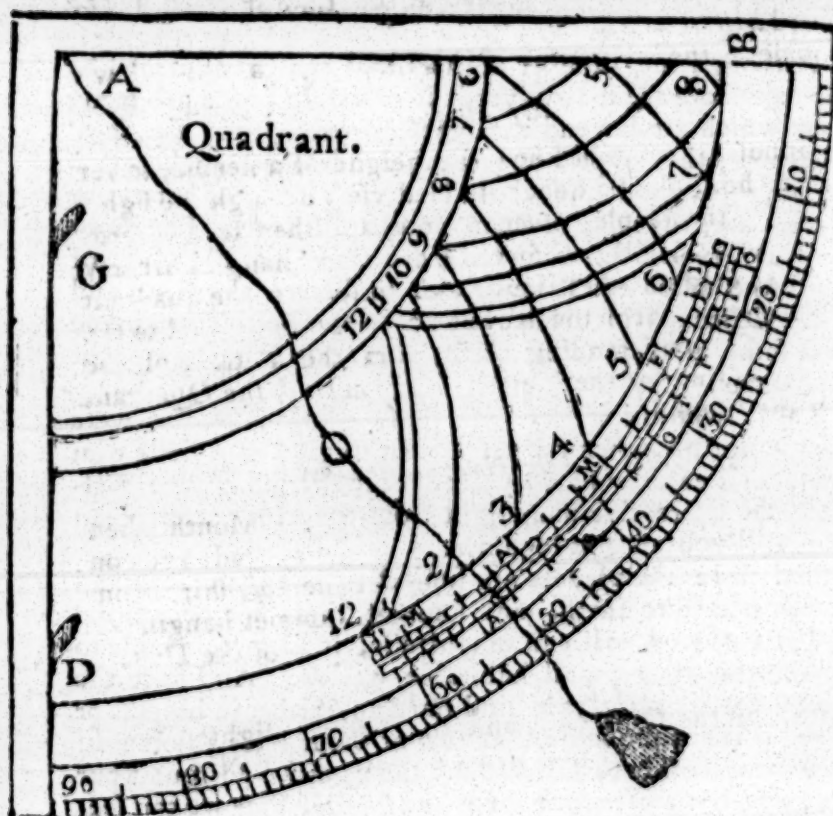
seen above 1000 stars in the whole Heavens with the naked eye, at the same time; and if we should distinctly view them, we shall not find many but what are inserted upon a good celestial globe.

Although the number of stars that can be discerned by the naked eye are so few, yet it is probable there are many more which are beyond the reach of our optics; for thro' telescopes, they appear in vast multitudes, every where dispersed, throughout the whole Heavens; and the better our glasses, are, the more of them we still discover. The ingenious Dr. Hook has observed 74 Stars in the Pleiades, of which the naked eye is never able to discern above 7; and in the Orien, which has but 80 in the British catalogue (and some of them telescopical) there has been numbered 2000 Stars.

Those who think that all those glorious Bodies were created for no other Purpose, than to give us a little dim light, must entertain a very slender idea of the Divine Wisdom: for we receive more light from the Moon itself, than from all the Stars put together.

And since the planets are subject to the same laws and motion with our Earth, and some of them not only equal to, but vastly exceed it in magnitude, it is unreasonable to suppose that they are all habitable worlds. And since the fixed Stars are no ways behind our Sun, either in bigness or lustre, is it not probable that each of them have a system of Planetary Worlds turning round them, as we do round our Sun? and if we ascend as far as the smallest Star we can see, shall we not then discover innumerable more of these glorious Bodies, which now are altogether invisible to us? And *ad infinitum* thro' the boundless space of the Universe. What a magnificent idea must this raise in us, of the Divine Being! who is every where, and at all times present, displaying his Divine Power, Wisdom and Goodness amongst all his creatures!

The next Thing I shall proceed to is, to describe and speak of the Use of a very necessary Instrument called a *Quadrant*, the shape of which is here represented.



This Quadrant, or quarter of a circle, is variously useful on fundry accounts, viz. to take Heights and Distances, whether accessible or inaccessible : To find the hour of the day, &c.

Its Description.

The outward Arch is divided into 90 Parts or Degrees (being the fourth Part of the Circle of the Sphere) and figured from 10, 20, &c. to 90: above which Figures are Letters signifying the 12 Calendar Months in the Year, as J. for January, F. for February, &c. And again over those Letters for the Month are Lines to know the Hour of the Day : And upon the G D, are Sights of thin Brads to be spied through, or for the Sun to shine through, from one to

the other. Lastly in the Middle or Point of the Quadrant, viz. at A, is a Line or Thread of Silk, fixed, through a Hole, with a Plummets of Lead at the End of it, and also a small Bead in the Middle.

Some of the many uses of this instrument are as follow ;

Of Heights.

Suppose you would know the height of a steeple, tower or tree; hold up the quadrant, and view through the sights the top of the steeple, tower, or tree, and then step forwards or backwards, till you find the plummet hang at liberty just at 45 degrees, that is just in the middle of the quadrant then is the height of the steeple, tower, or tree, equal to the distance of your standing place from the Bottom of the Steeple adding for the Height that you hold the Quadrant from the ground.

To find the Hour of the Day.

Lay the Thread just upon the Day of the Month, then hold it till you slip the small Bead or Pin's Head to rest on one of the 12 o'Clock Lines; then let the Sun shine from the Sight at G to the other at D, the Plummet hanging at liberty, the Bead will rest on the Hour-line of the Day.

To find the Latitude of a Place nearly.

Hold up the Quadrant, and through the Sights thereof (or along the Edge) spy, in a clear Star-light Night, the North Pole Star; the Plummet hanging at liberty, the Thread will rest on the Degrees of Latitude of the Place you are in, or where you take your Observation.



The Extraction of the Square and Cube Roots, of great Use in Measuring, Guaging, &c.

The Square Root.

1st. A Square Number ariseth from the Multiplication of a Number into itself, the number so multiplied being called the Root; thus 4 multiplied by 4, produces 16; so 16 is a square number, and 4 is the Root thereof; so also 4 is the Square of 2, for twice 2 is 4, and 9 is the Root of 81, for 9 times 9 is 81, &c.

2^{dly}. To extract the Square Root of any Number, is to find another Number which multiplied by (or into) itself, produces the Number given; and after the Root is found, such a Multiplication is a Proof of the Work.

3^{dly}. Square Numbers are either single or compound.

4^{thly}. All the single Square Numbers, with their respective Roots, are contained in the following Table, viz.

<i>Roots.</i>	1	2	3	4	5	6	7	8	9
<i>Squares</i>	1	4	9	16	25	36	49	64	81

5^{thly}: When the square Root of any Number less than 100 is required, and that Number is not expressed in the Table above; then you are to take the Root of that square Number in the Table, which (being less) comes the nearest to the given Number: Thus if the square Root of 50 were required, then, since 49 is the nearest square Number in the Table, therefore its Root 7, will be the Root of the given Number nearly.

6^{thly}. A Compound square Number, is that which is produced by a Number consisting of more Places than one, multiplied by itself, and is never less than 100; so 729 is a Compound square Number, produced by the multiplying 27 into itself.

7^{thly}. The Root of any Number under 100 may be easily known by the foregoing Table of single Squares: But to extract the Root of a compound Number of several Places, observe the following Directions.

Example I. Let the square Root of the Number 45796 be required.

1. Set a Point over the Place of Units thus. 45796, and so successively over every second Figure towards the Left-hand, as thus, 44796; and thus, 44796. But in Decimals you must point from the Place of Units towards the Right-hand, omitting one Place, as above; as if the Place of Decimals are odd, affix a Cypher towards the Right-hand of them to make them even. Your Number thus prepared, draw a crooked Line on the Right of the Number, as in Division; & indeed, the Operation of the square Root is not much unlike Division; only there the Divisor is fixed, and

in the square Root we are to find a new one for each Operation. I say, having made a crooked Line thus, 45796(2) seek in the forgoing Table for the nearest Square to the first Point on the Left-hand, which here is 4, the Root of which is 2, which Root place on the Right hand of the crooked Line. and set its Square 4 under the said Point, as below :

$$\begin{array}{r} \cdot \cdot \cdot \cdot \\ 45796(2 \\ 4 \\ \hline (0) \end{array}$$

Then subtract, and there remains 0: To the Remainder, bring down the next Point 57 thus :

$$\begin{array}{r} \cdot \cdot \cdot \cdot \\ 45796(2 \\ 4 \\ \hline 057 \end{array}$$

Which call the Resolvend; then double the Root of the first Point, and place it on the Left hand of the Resolvend, thus

$$\begin{array}{r} \cdot \cdot \cdot \cdot \\ 45796(2 \\ 4 \\ \hline 4) 057 \end{array}$$

Call the 4, the Double of the Root 2, thus placed on the Left-hand of the crooked Line, the Divisor, and seek how of-ten 4, the Divisor, can be taken in 5, the first Figure of the Resolvend 57 (for you are to omit the last Figure toward the Right-hand) which here is once, place 1 to the Right of the Root 2, and also of the Divisor, 4 thus :

$$\begin{array}{r} \cdot \cdot \cdot \cdot \\ 45796(21 \\ 4 \\ \hline 51) 057 \end{array}$$

Then multiply the Divisor (now 41) by the Figure last placed in the Root, viz. 1, place it under the Resolvend, and subtract it therefrom.

D d

$$\begin{array}{r}
 \cdot \cdot \cdot \\
 45796(21 \\
 \underline{4} \\
 41)057 \\
 \underline{41} \\
 \hline
 16
 \end{array}$$

Then bring down the next Point, viz. 96, and place it on the Right of the Remainder 16, for a new Remainder, or Dividend, thus. Next the double the Quotient, or Part of the Root, viz. 21, and place it for a new Divisor to the new Resolvend 1696, thus:

$$\begin{array}{r}
 \cdot \cdot \cdot \\
 48696(21 \\
 \underline{4} \\
 \hline
 41)057 \\
 \underline{41} \\
 \hline
 42)1696
 \end{array}$$

Then seek how oft 42 in 169? (still reserving or omitting the unit Figure of the Resolvend or Dividend as aforesaid) and I find I can have it 4 times, which 4 I place in the Quotient and in the Divisor, and proceeding as before, the Work will appear thus:

$$\begin{array}{r}
 \cdot \cdot \cdot (214 \text{ Root.} \\
 45796 \\
 \hline
 41)057 \text{ Resolvend} \\
 \underline{41} \\
 \hline
 424)1696 \text{ Resolvend} \\
 \underline{1696 \text{ Product}} \\
 \hline
 (0)
 \end{array}$$

In the last Operation, I place 4 in the Root, and likewise in the Divisor 42, which makes the new Divisor 424, to the Resolvend 1696; which Divisor multiplied by 4, the Figure placed in the Root, produces 1696; equal with the Dividend or Resolvend aforesaid, as above may be seen. Therefore the square Root of 45796, is 214; for 214, multiplied into itself, produces 45796, the Number whose square Root was sought.

Ex

Example II. What is the square Root of 12299049 (3505 the Root.

$$\begin{array}{r}
 9 \\
 \hline
 1^{\text{st}} \text{ Divisor } 65 \overline{) 329} \text{ Resolvend.} \\
 \underline{325} \text{ Product.} \\
 2^{\text{d}} \text{ Divisor } 700 \overline{) 490} \text{ Resolvend.} \\
 \underline{000} \text{ Product.} \\
 3^{\text{d}} \text{ Divisor } 700 \overline{) 49049} \text{ Resolvend} \\
 \underline{49049} \\
 (0)
 \end{array}$$

Example III, performed Decimally

$$\begin{array}{r}
 160,000000 \text{ (12,1649 Root.} \\
 1 \\
 1^{\text{st}} \text{ Divisor } 22 \overline{) 060} \\
 \underline{44} \\
 2^{\text{d}} \text{ Divisor } 246 \overline{) 1600} \\
 \underline{1746} \\
 3^{\text{d}} \text{ Divisor } 2525 \overline{) 12400} \\
 \underline{10096} \\
 4^{\text{d}} \text{ Divisor } 25289 \overline{) 230400} \\
 \underline{227601} \\
 2799
 \end{array}$$

Note, That when the Divisor cannot be had in the Resolvend, then place a Cypher in the Quotient, and also on the Right of the Divisor, and then bring down the next Square, &c. as in the second Example just given may be seen.

Note further, If any Remainder happen to be after Extraction, you may proceed by annexing Pairs of Cyphers to the left of the given Number, and so come to what exactness you please.

Note also, Such Numbers given for Extraction that leave Remainders, are by some called Irrationals, because their Roots cannot be exactly discovered, but still there will something remain then work by whole Numbers or Fractions: As in the Example above, where the Remainder is 2799.

The Extraction of the cube Root.

TO extract the Cube Root of any Number, is to find another number, which multiplied by itself, and that Product by the number found, produces the number given for Extraction.

All singular cube numbers, with their respective Roots are contained in the following Table.

Roots	1	2	3	4	5	6	7	8	9
Cubes	1	8	27	64	125	216	343	542	729

1st. To prepare any number for Extraction, make a point over Unity, and so successively over every third figure towards the Left-hand in Integers, missing two between each point; but in Decimals you must point from the place of Units to the right, &c.

Example.

Extract the cube Root of 46656 prepared thus, as above directed

46656

Here are but two Points, therefore the Root will have but two Places.

2^{dly}. The number being prepared, seek in the foregoing Table the nearest Root to the first Point or Period 46, which you will find to be 3, which place in the Quotient, thus, 46656(3; the Cube whereof is 27, which place under your first Period 46, as in the Margin; subtract it from 46, and there rests 19; this is your first 46656(3 Work, and no more to be repeated. Then to 27 the Remainder 19, bring down the next Period, — viz. 656 (which is the last) and place it on the 19 right of the Remainder 19.

46656(3
27

19656 Resolvend.

Then draw a Line under the Resolvend next square the 3 placed in the Quotient, which makes 9; which multiplied by 300 makes 2700 for a Divisor which place accordingly thus:

$$\begin{array}{r} 46656(3 \\ 27 \\ \hline 2700)19656 \end{array}$$

Then seek how often 2 in 19? Answer but 9 times, because of the increase that will come from the Quotient, and place 6 in the Quotient; then multiply the Divisor by 6, and the product will be 16200; which place orderly under the

Resolvend thus:

$$\begin{array}{r} 46656(36 \\ 27 \\ \hline 19656 \\ \hline 16200 \end{array}$$

Then proceed to find the Increase coming from the Quotient thus: Square your last figure 6, and it makes 36; which multiplied by 3, the other figure of the Quotient, it gives 108; which multiplied by 30, make 3240. This place also orderly under the last number before set down, viz. 16200, and the Work will appear thus:

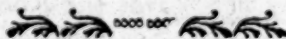
$$\begin{array}{r} 46656 \\ 27 \\ \hline 2700)19656 \\ \hline 16200 \\ 3240 \end{array}$$

Then cube the Figure last placed in the Quotient, viz. 6 and it makes 216; which place orderly likewise under the Line 3240; add the three Lines together, and they make 19656; which is equal to the Resolvend above, viz. 19656 and there being no more Periods to bring down, I see the Work is finished, and find the Cube Root of 46656 to be 36.

This will appear to be true if the Root 36 be multiplied by 36, and that product by 36 again, for then the Result will be 46656, as in the following Operation.

D d 3

$$\begin{array}{r}
 36 \\
 36 \\
 \hline
 216 \\
 108 \\
 \hline
 1296 \\
 36 \\
 \hline
 7776 \\
 3288 \\
 \hline
 46656 \text{ Proof}
 \end{array}$$



Some Uses of the Square and Cube Root.

1. *To find a mean Proportional between two Numbers.*

Rule. **T**HE square Root of the Product of the given Numbers is the mean Proportional sought; so the mean Proportional between 16 and 64, will be 32, for 16 multiplied by 64 produces 1024. This is of Use in finding the Side of a square equal to any Parallelogram, Rhombus, Rhomboides, Triangular, or regular Polygon.

2. *To find the Side of a Square equal to the Area of a given Superficies.*

Rule. The square root of the content of any given superficies is the side of the square.---So if the content of a given circle be 160, the side of the square equal will be 12,649.

3. The Area of a circle being given, to find the Circumference.

4. The Area of a circle being given, to find the Diameter.

5. Any two Sides of a Right-angled Triangle being given, to find the third Side.

This depends upon a Mathematical Proposition, in which it is proved, that the Square of the Hypothenufe, or longest Side of a Right-angled Triangle, is equal to the Sum of the Square of the Base and Perpendicular, that is, of the other two Sides.

See

See Figure XIII.

Case 1. Let the Base or Ground A B represent the Breadth of a Moat or Ditch, and the Perpendicular B C the Height of a Castle, Tower, or City-wall; and the Hypothenufe A C, the Length of a Scaling-ladder.

In this Figure, the Base A B is supposed to contain 40 Yards; and the perpendicular, or height of the Tower or Wall, 30 Yards; what Length will the Hypothenufe, A C, or the Scaling-ladder be?

Rule. The square Root of the Sum and Squares of the Base and Perpendicular, is the Length of the Hypothenufe. See the Work.

1600 the Square of the Base 40.

900 the Square of the Perpendicular 30.

The Sum 2500 (50 Yards the Root or Length of the
25 Scaling-Ladder.

(0)

Case 2. If the Length of the Base, or Breadth of the Ditch were required: then the Square Root of the Difference of the Squares of the Hypothenufe and Perpendicular is the Length of the Base, or Breadth of the Ditch or Moat.

2500 the Square of the Hypothenufe. A. C.

900 the Square of the Perpendicular. B. C.

The Differ. 1600 (43 Yards, the Root or Breadth of the
16 Ditch.

(0)

Case 3. If the Height of the Tower or Perpendicular B C were required; then the square Root of the Difference of the Squares of the Hypothenufe and Base, is the Height of the Perpendicular B C.

6. Any Number of Men being to be formed into a Square Battalion, to find the Number of Rank and File.

Rule. The square Root of the number of Men given, will be the number of Men to be placed in rank and file.

Example. Admit an army of 32400 men were to be formed into a square Battalion; the square Root of 32400 will be found to be 180, and so many men must be placed in rank, and also in file.

7. To

7. To find the Side of a Square, Polygon, or the Diameter of a Circle, which shall be, to any other given Square, similar Polygon, or Circle, in a given Proportion.

Rule. Since like Surfaces are to each other, in a duplicate Proportion of their like Sides; therefore,

As the given Circle, Square or Polygon,

Is to the required Circle, Square or Polygon:

So is the Square of the Diameter or Side of the first,

To the Square of the Diameter or Side of the second.

Then the square root of the Result of the above Proportion will be the Diameter or Side required.

Example I. There is a Circle whose Diameter is 11; what will the Diameter of that Circle be, whose Area is four times the Area thereof?

Here 11 Times 11 is 121; and

$$\begin{array}{r}
 \text{As } 1 \text{ --- } 4 \text{ --- } 121 \\
 \quad \quad \quad 4 \\
 \quad \quad \quad \hline
 \quad \quad \quad 484 \text{ (22 the Answer.} \\
 \quad \quad \quad 4 \\
 \quad \quad \quad \hline
 \quad \quad 42 \overline{)84} \\
 \quad \quad \quad 84 \\
 \quad \quad \quad \hline
 \end{array}$$

Example 2. There are two similar Polygons, whose Areas are 9 to 25, and the Side of the lesser is 12 Yards; what is the Side of the greater? Here 12 times 12 is 144; and

$$\begin{array}{r}
 \text{As } 9 \text{ --- } 25 \text{ --- } 144 \\
 \quad \quad \quad 25 \\
 \quad \quad \quad \hline
 \quad \quad \quad 720 \\
 \quad \quad \quad 288 \\
 \quad \quad \quad \hline
 \quad \quad 9 \overline{)3600} \\
 \quad \quad \quad \hline
 \quad \quad \quad 400 \text{ (20 the Answer.} \\
 \quad \quad \quad 4 \\
 \quad \quad \quad \hline
 \quad \quad \quad 000
 \end{array}$$

8. The Uses of the Cube Root are to find out the Dimensions of like Solids, as Globes, Cylinders, Cubes, &c.

Rule. Since like Solids are to each other, as the Cubes of their like Sides or Diameters; therefore.

As the Content or Weight of a given Solid,

To the Content or Weight of another like Solid;

So is the Cube of the Side or Diameter of the one,

To the Cube of the Side or Diameter of the other.

Then the Cube Root of the Result will be the Length of the Side or Diameter required.

Example I. If a Bullet that weighs 72lb. is 8 inches in Diameter, what will be the Diameter of that Bullet that weighs 9lb. Here the Cube of 8 is 512; and

$$\begin{array}{r}
 \text{As } 72 \text{ --- } 9 \text{ --- } 512 \\
 \qquad \qquad \qquad 9 \\
 \hline
 72 \overline{) 4608} (64 \\
 \underline{432} \\
 288 \\
 \underline{288} \\
 0
 \end{array}$$

Then the Cube Root of 64, viz. 4, is the Diameter required.

Example II. If a Ship of 100 Tons be 44 Feet long at the Keel, of what Length must the Keel of a Ship be that carries 220 Tons?

Say, as 100 is to 220; so is the Cube of 44, viz. 15184, to 187404,8; whose Cube root is 57,226, the Length of the Keel sought.

Example III. There is a cubical Vessel whose Side is 12 inches, and it is required to find the Side of a Vessel that holds three time as much. Here the Cube of 12 is 1728, which multiplied by _____ 3 _____

produced _____ 5184
the Cube root of which is 17,386 the Answer required, or sought.

322 *The Young Man's best Companion.*

An easy Rule to find the Length of the Masts of a Ship, viz.

Two-thirds the Length of the Keel, and the Breadth of the Beam, is the Length of the Main-mast; the rule is, therefore, to multiply the Length of the Keel by 2, and to divide the Product by 3, and then to the Quotient add the Breadth of the Beam, and the Total is the Length of the Main-mast.

Example. Suppose a Ship to be 108 Feet by the Keel, and 40 Feet by the Beam, what is the Length of her Main-mast?

$$\begin{array}{r}
 108 \\
 \times 2 \\
 \hline
 216 \\
 21 \quad \left\{ \begin{array}{l} 72 \text{ two-thirds of the Keel.} \\ 40 \text{ the Breadth of the Beam.} \end{array} \right. \\
 \hline
 256 \\
 112 \\
 \hline
 368
 \end{array}$$

Answer. The Length of her Main-mast is 112 Feet, as in the Work.

Again, Admit a Ship to be 84 Feet by the Keel, and 31 feet by the Beam, what is the Length of her Main-mast?

84 per Keel.

$$\begin{array}{r}
 84 \\
 \times 2 \\
 \hline
 168 \\
 \hline
 \text{Add } \left\{ \begin{array}{l} 56 \\ 31 \end{array} \right. \\
 \hline
 225
 \end{array}$$

Ans. 87 Feet the Length of the Main-mast.

Another Way to find the Length and Thickness of Masts and Yards. viz.

The way to find the Length to the Main-mast is to add the Breadth of the Beam, and the Depth of the Hold, in Feet together, and divide the Total by 1, 5, and the Quotient will be the Length of the Main-mast.

Example

Example. Admit a Ship whose Keel in length 73 feet, and the breadth of the Beam 28,5 feet, and the depth of the Hold 12 feet; what is the length of the Main-mast;

$$\begin{array}{r}
 \text{Feet.} \\
 28,5 \text{ Breadth of the Beam} \\
 12,0 \text{ Depth of the Hold.} \\
 \hline
 1,5)40,5(27 \text{ Yards } \textit{Answ.} \\
 \underline{30} \\
 105 \\
 \hline
 0
 \end{array}$$

Answer, 27 Yards, or 81 Feet, as per Work.

To find the Thickness of the Mast, having the Length, say, by the Rule of Proportion (or Rule of Three) If 84 Feet long require 28 Inches thick, what will 81 Feet long? as in the following Work.

$$\begin{array}{r}
 \text{F. l.} \qquad \qquad \text{In. thick.} \qquad \qquad \text{F. l.} \\
 84 \text{ --- } 28 \text{ --- } 81 \\
 \qquad \qquad \qquad 81 \\
 \qquad \qquad \qquad \text{-----} \\
 \qquad \qquad \qquad 28 \\
 \qquad \qquad \qquad 224 \\
 \qquad \qquad \qquad \text{-----} \\
 84) 2268 (27 \text{ Inches thick, } \textit{Answ.} \\
 \underline{168} \\
 588 \\
 \underline{588} \\
 \text{-----} \\
 (0)
 \end{array}$$



Of D I A L L I N G.

DIALLING is a very ancient Art, even as old as the time of King *Hezekiah*. where mention is made of the Dial of *Abaz*, in the 2d Book of *Kings*, Chap. xx. ver. 11.

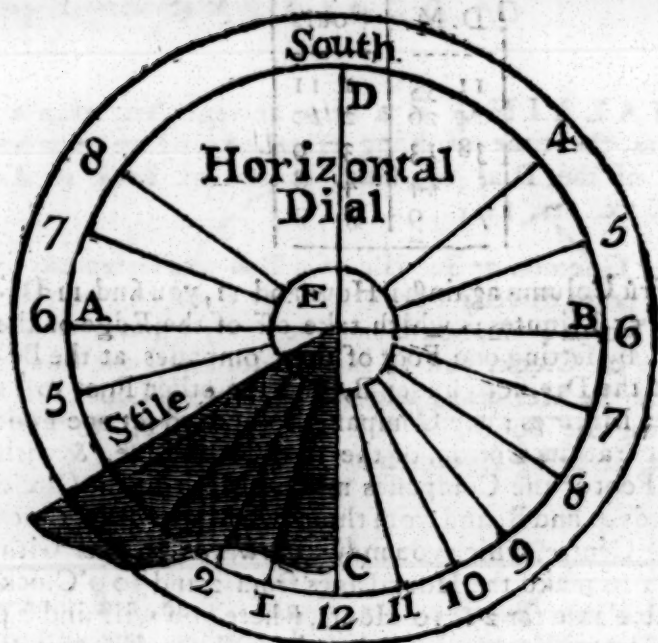
The Gnomon or Substile of a Post or Horizontal Dial, shou'd point directly South, and its Back will be then directly North; the South may be truly known by a good Watch or Clock, just at Noon: for then the Sun is always at the Meridian, and makes just 12 o'Clock: so that knowing the South, it will not be difficult to find the North, it being its opposite.

To fix a Dial North and South,

Fasten your Board on the Top of a Post, and then with your Compass make 4, or 5 or 6 Circles, one within the other, from the Centre or Middle, where place a large Pin perpendicular or upright, and nicely observe, when the Sun shines in the Forenoon, on which Circle the Head of the Pin shadoweth; then there make a Mark; and do the same in the Afternoon, when the Shade of the Pin's Head comes on the same Circle; and from the Midway of the two Marks, draw a Line to the Centre, on which place your Meridian or 12 o'Clock Line; so will the Post-dial point North and South.

By a Meridian Line you may also know when the Moon, or a Star of Magnitude, comes to the South; which when they do, they are always at the highest, whether by Night or Day.

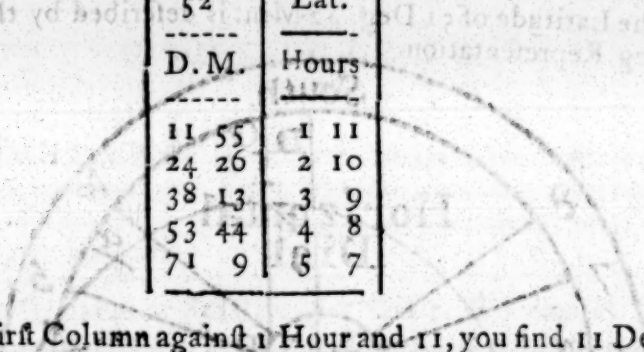
The following Figure represents a Horizontal-Dial.



First with a Ruler draw the Line AB, then cross it in the Centre with another Line, as the Line CD, which is the Meridian or 12 o'Clock Line; and the first Line drawn viz. AB, is the 6 o'Clock Line: Then open your compasses, and place one Foot at the Beginning of the Degrees, or the Arc Edge of your Quadrant; and extend the other Foot to 60 Degrees, and with that Extent place one Foot in the Centre of the Dial, at E; where the two first Lines cross one another, and draw the Semicircle ACB.

Next having the 12 o'Clock Line EC, to know what Distance must be set off from it, for 11 o'Clock and 11 o'Clock, being all one; be directed by the following small Table, viz.





52°		Lat.	
D. M.		Hours	
11	55	1	11
24	26	2	10
38	13	3	9
53	44	4	8
71	9	5	7

In the first Column against 1 Hour and 11, you find 11 Degrees, and 55 Minutes; which take off of the Edge of the Quadrant, by setting one Foot of the Compasses at the Beginning of the Divisions under B, and the other Foot to 11 Degrees 55 Minutes; the Compasses so opened set one Foot in the Circle at the Bottom of the 12 o'Clock Line, & with the other Foot of the Compasses make a Mark in the Circle both towards A and B, and from those two Marks draw Lines towards the Centre, which you may afterwards go over with Ink. Then to make the Hour Lines from 2 and 10 o'Clock look in the Table for 2 & 10 Hours, where you will find 24 Degrees and 26 Minutes, which take off the Degrees of your Quadrant, and mark as the other from the 12 o'Clock Line both Ways in the Circle.

Note, The same is to be done for 3 and 9 o'Clock, and also for 4 and 8 o'Clock; and the like for 5 and 7 o'Clock; and for 5 and 7, 4 and 8, above the 6 o'Clock Line, set off the same Distances as below it.

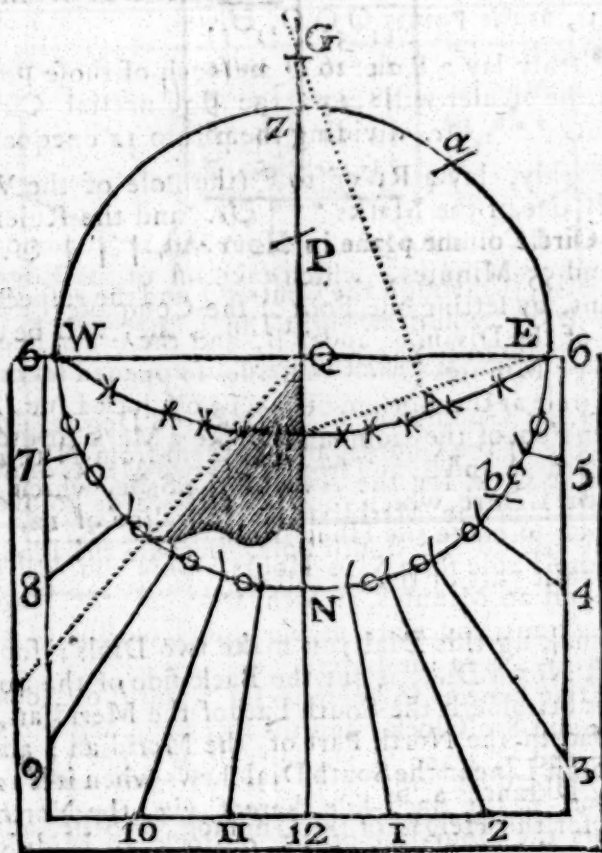
Then for the Height of the Gnomon, or Stile, admit 52 Degrees, take it off the Edge of the Quadrant with the Compasses as before, and with that Extent set one Foot at the Bottom of the 12 o'Clock Line as before, and extend the other Foot in the Circle, and make a mark, and then draw a Line from thence to E the Center, for the upper Edge of the Stile, and raise it directly over the Meridian of 12 o'Clock Line.

Of Upright Planes..

Those Planes are said to be erect or upright which stand perpendicular to the Horizon of the Place, whose upper Part pointeth to the Zenith, and their lower Part to the Nadir; and such are Walls of Houses, Churches, Steeples &c. against which Dials are commonly made.

How

How to draw the Hour Line on a direct South Plane, in the Latitude of 51 Deg. 42 Min. is described by the following Representation.



First draw the Circle Z E W N, representing an upright direct South Plane; next cross it with the Diameters Z Q N for the Meridian or 12 o'Clock Line; and W Q E for the prime Vertical Circle, or Hour line of Six.

Secondly out of your Line of Chords take 38 Degrees 28 Minutes (the Complement of the Latitude of the Place) and set that Distance on the Dial plane from Z to *a*, and from E to *b*, and from N to *e*.

Thirdly lay a Ruler from W to *a*, and it will cut the Meridian Z N in the Point of P, the Pole of the World; and a Ruler is also laid from W to *b* will cut the Meridian in *AE*, which is the Point thro' which the Equinoctial must

pass;

pass; for the Drawing of which you have three Points given, *viz.* E. A. and W, and the Centre will always be in the Meridian Z N.

Fourthly, divide the Semi-circle E N W into 12 equal Parts, as the Points O O O, &c.

Fifthly lay a Ruler to Q and each of those points O O O and the Ruler will cross the Equinoctial Circle in the Points * * * &c. dividing them into 12 unequal Parts.

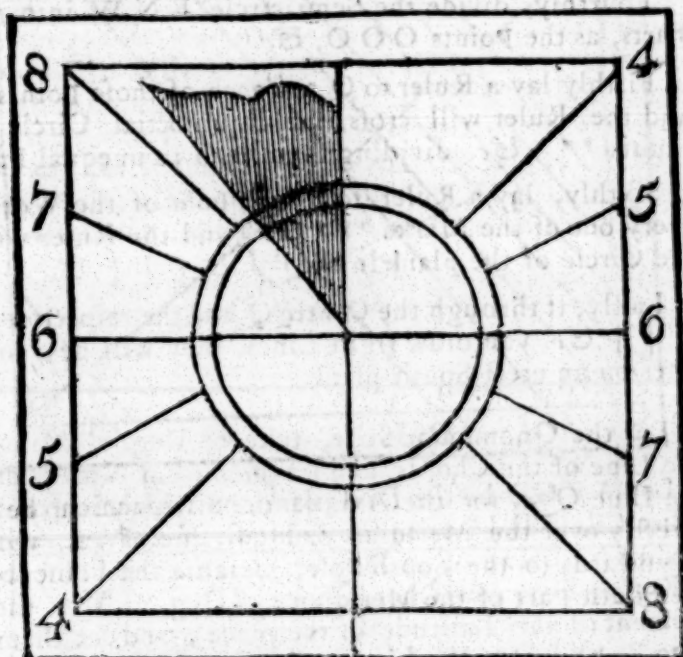
Sixthly, lay a Ruler to P (the Pole of the World) and every one of the Marks * * * &c. and the Ruler will cross the Circle of the plane in the Points | | | &c.

Lastly, if through the Centre Q and the respective Points | | | &c. you draw right Lines, they will be true Hour-lines on an erect South-plane.

For the Gnomon or Stile, take 38 Deg. 28 Min. out of the Line of the Chords, and set them from N to *e*, drawing the Line Q *e*. for the Axis of the Stile, which must hang directly over the Meridian or Hour-line of 12, and point downwards to the South Pole, because the Plane beholds the South part of the Meridian.

In making this Dial you make two Dials; for the Erect Direct North Dial, is but the Back-side of the South; for as this beholdeth the South Part of the Meridian, so the other faceth the North Part of the Meridian; and as the Meridian Line in the South Dial shews when it is 12 o'Clock at Noon so the Back-side thereof, *viz.* the North Side represents the Hour-line of 12 o'Clock at Midnight, and therefore not expressed, nor the Hour-lines of 9, 10, 11 at Night, or of 1, 2, or 3 in the Morning, the Sun being never seen by us above the Horizon at those Hours: So that the North-dial is capable of only receiving the Hours of 4, 5, 6, 7, and 8 in the Morning, and 4, 5, 6, 7, and 8 at Night and (in this Latitude) not all of them neither; for it shines not in this Plane, at 8 in the Morning, nor at 4 in the Afternoon; but it is best to put them down as in the Figure following, to know how much it is past in the Morning, and what it wants of 5 in the Afternoon.

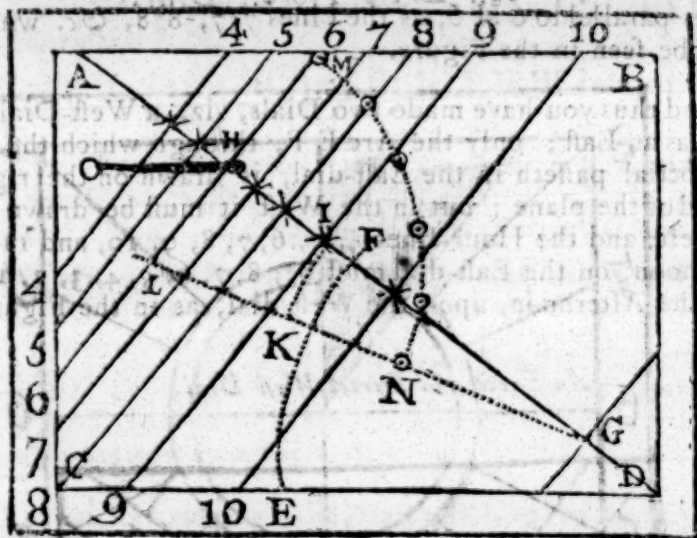
An Erect North Dial.



To draw the Hour-lines on an erect direct East or West plane.—Hour-lines in these Dials must be parallel to one another, and the Dial not have any Centre, but drawn as follows.



An East Direct Dial in the Latitude of 51 Deg. 32 Min.



Let A B C D be the Dial plane, on which is to be drawn a direct East-dial: upon the Point C, if a West, with the Radius (or Chord of 60 Degrees) describe the obscure Arc E F; then from your Chords, take 38 Deg. 28 Min. the complement of the Latitude of the place; and set them from E to F, and draw the Line D F quite through the plane; then, that you may proportion the Stile to the plane, so that you may bring on all the Hours from Sun-rising to 11 o'Clock, assume two points in the Line E D, one towards the End D. (as the point G) for the Hour-line of 11 and another at H, for the Hour-line of six: and through the points G and H, draw the Lines 11 G 11, and 6 H 6 on the point G, with the Chord of 60 Degrees, describe the obscure Arc I K; and taking 15 Degrees from the Scale of Chords, in the compasses, set one Foot in I, and with the other, cut the Arc I K in K; through G and K draw the Line G K L, cutting the Line 6 H 6 in the point L; so shall L H be the Height of the perpendicular Stile proportioned to this plane.

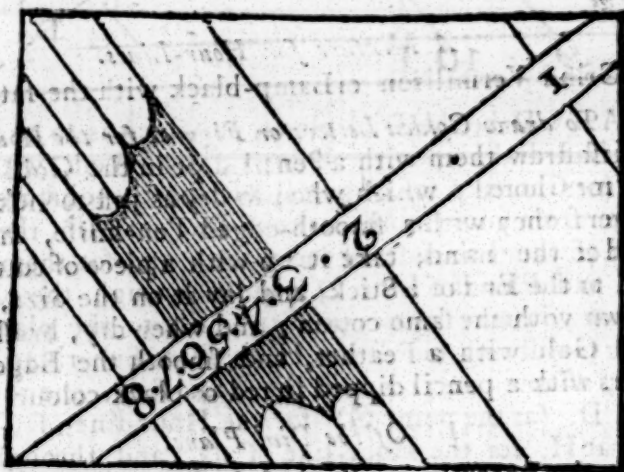
For the drawing of the Hour-lines, set one Foot of the compasses (opened to 60 Degrees of the Chords in L, and with the other describe Arc MN, between the Hour-line of 6, and the line GL; which divide into five equal parts in the O O O O O and a Ruler laid from the point L, to each

of

of these points O O O, &c. will cut the Equinoctial Line H D in the points *****; through which points draw Lines parallel to G H 6, as the Lines 7 7, 8 8, &c. which may be seen in the Figure.

And thus you have made two Dials, viz. a West-Dial as well as an East; only the Arc E F, through which the Equinoctial passeth in the East-dial, is drawn on the right Hand of the plane; but in the West it must be drawn on the left; and the Hour-lines 4, 5, 6, 7, 8, 9, 10, and 11 in Forenoon, on the East-dial must be, 8, 7, 6, 5, 4, 3, 2, and 1 in the Afternoon, upon the West-dial, as in the Figure.

An Erect and Direct West Dial.



The Stile of the East or West-dials, may be either a straight pin of the just Length of the Line H O in the other Figure, which is equal to H L fixt in the point H, on the Hour-line of 6, and exactly perpendicular to the plane, shewing the Hours by the Shadow of the Apex, or very near the Top thereof; or it may be a plate of thin Brass of the same Breadth with the Distance of the Hour Lines of 6 and 3; which plate must be set perpendicular upon the Hour-lines of 6, and so it will shew the Hour by the Shadow of the upper Edge thereof, as in the last Figure.

Of beautifying and colouring Dials.

FIRST, the Boards are to be brushed over with Linseed Oil, thinly ground with *Spanish Brown*, done over three or four times (drying between each time) a little thicker each time with the Colour; and this is called the *Priming*.

To make the Fat Oil for Dials..

Boil Red-lead, and Linseed Oil, and a little litharge of Gold, (about a pennyworth) together, till almost as thick as syrup; and when cold, and well settled, pour the clearest into a Bottle or Bladder, for Use.

The Gold Size for Dials.

Mix fine ground yellow Oaker with the aforefaid fat Oil to such a consistency, as when used, it may settle smooth of itself,

A Mixture for Hour-Lines.

Grind Vermillion or Lamp-black with the fat Oil.

To draw Golden Letters or Figures for the Hours.

First draw them with a Pencil dipt in the Gold Size before mentioned; which when so dry as just to stick to your Fingers, then with a smooth-edged Pen-knife, shape your Gold to your mind; take it up with a piece of cotton cloth fixed to the End of a Stick, and lay it on the Size, pressing it down with the same cotton; and when dry, brush off the loose Gold with a Feather, and smooth the Edges of the letters with a pencil dipped in red or black colour.

Of the Dial Plane.

Let the Board be of the best seasoned, firmest, clearest Oak, one, two, or more Feet square, and about three inches thick. Take two Boards, and get them planed on both sides and then laid in the Sun-shine, or near a moderate Fire 2 or 3 Days together; then plane them again, and fix them with good Joints and fasten them in gluing with wooden Pegs, as I have seen Coopers fix their pieces of Heading for their Casks; and when thus glued and dried, plane them again, and fasten them, by nailing two small plates of Iron or Tin on the Back. If you cannot get seasoned Wood, but green, then boil it an Hour in Water to make it tough, and keep it from warping. In the general, Wood is accounted better than Stone, because it keeps the colouring more staunch and firm.

Before

Before you colour your Dial-plate or Board, fix your Iron Stile of 38 Degrees) which indifferently serves for all England) and having thus marked your Hour-lines with Ink, and fastened a Nail at the End of each Hour-line, that the Head of each Nail may shadow or direct you to the Centre when it is coloured. And as it may happen that Golden Letters or figures may decay in a few Years, you may on that account make them with White-lead Paint, painted with Red in black Margin. — When your Dial is finished and dry, dip a Feather in your Oil, and anoint it thinly; for the fineryou mix or grind the colouring with the Oil, the more beautiful it appears, though not so lasting.

These Hints of colouring Dials, put me in mind of some other necessary Touches relating to sundry Mixtures of Colours and dying of Stuffs, &c. collected from Mr. Salmon's *Polygraphice*.

Of Colouring and Dying.

Whites, are Ceruse, Flake-white, and White-lead.

Blacks, are Lamp-black, burnt Cherry-stones, and old Ivory burnt.

Reds, are Red-lead, Vermillion, Red Oaker, and Indian Lake.

Greens, are Verdigrease, Verditer, and Sap-green made of the Juice of Buckthorn Berries.

Yellows, are made of Saffron, Yellow-pink, Gambogia.

Brown, is Umber burnt.

Gold Colour, is Orpiment.

Again, *Verdigrease* with a little Sap-green, makes a good and bright Green.

Blues, are Ultramarine, Smalt, Indigo, and blue Bice.

Of Mixing Colours.

Colours are mixed by being ground on a Stone with fair Water severally, and Dried and kept in Paper Bags for Use; except Lamp-black, Saffron, Smalt, Gambogia, and Sap-green.

Blue, to compound; temper a little Indigo and Smalt with Oil.

A light Blue, mix Smalt and White Lead together.

Lead Colour, mix Lamp-black and White-lead together on a Marble.

A Fox Colour, is Umber burnt.

Gold

Gold Colour, is Orpiment mixt with fat Oil, by a Knife on an Earthen Plate, or Gally-tile rather.

To hinder Colours from cracking, put Oil of Walnuts to them.

Yellow Colour, beat Saffron to powder, and steep it in Vinegar.—Or take the yellow Chieues in White Lillies and Gum-water mixt for writing.

Red, Vermillion with Gum-water mixed for writing.

Golden Letters, to write; mix Vermillion and Gum Armoniac with the Yolk of Eggs.

Of Dying Wool, Stuffs, &c.

To dye *Blue*,---Take Woad one Pound, and mix it with 4 pints of boiling Water, and steep Whites in it 24 Hours.

To dye *Red* of a clear colour.---Take 60 pints of Water wherein Bran as been steeped 14 Hours, and when strained dissolve two pounds of Allum, and one pound of Tartar; in which Water boil what you have to dye for two Hours; then take it out, and boil it in half as much fresh Water made of Bran; viz. 30 pints; to which add Madder 3 pounds, and so perfect the Colour with moderate warmth, without boiling.

To dye *Green*,---First make a Yellow by the Direction underneath; then take 60 pints of Water wherein Bran hath been soaked, aforesaid; then strain it, let 3 pounds of Allum be dissolved in it, for two Hours.

To dye *Yellow*,---Take Woad two pounds, of the said Water of Bran, and boil till the Colour is good.

And if you would have the said Yellow to be *Green*, put the Stuff into the aforesaid *Blue Lye*.

To dye a *Sad Colour*,---add Logwood to the *Black Dye* before-mentioned.

To dye Linen or Thread, &c. *light Red*,---Take powder of Brazil and Vermillion, of each one Ounce, boiled in Allum Water.

To dye Linen or Thread *Yellow*: dissolve Gambogia in Allum-water, &c.

To stain Skins, blue; boil Elder-berries, and with the liquor brush over the Skins, and wring them, then boil the Berries in Allum-water, and wet them twice over.

Of Money.

THE current Coin of this Nation, is made either of Copper, Silver, or Gold. Of *Copper* is made the Farthings and Halfpence, of *Silver* the Pennies, Two-pences, Three-pences, Groats, Sixpences, Shillings, Half-crowns, and Crowns: But there is very little Silver coined below the Sixpence. Of Gold is made the Quarter Guinea, the Half Guinea, the Guinea, and the 5 Guinea Piece: Besides there are Foreign Pieces of Gold that pass, though with some Scruple; as the *Portuguese Moidore*, at 27s. Pieces of 36s. each: and others of 3l. 12s. There are also some few ancient Pieces of Gold of a pale Colour, as being alloyed with Silver, and therefore may be reckoned the best, and sometimes called Angel or Crown Gold; but the old Gold or broad Pieces are mostly alloyed with Copper, which makes them of a reddish Colour.

Imaginary Money.

We appropriate several Names to Money of which there is no Coin; as,

	s.	d.
The Pound of ----	20	0
The Mark ---	13	4
The Noble, or half Mark -----	06	8
The Angel -----	10	0

In *England*, Accompts are kept in Pounds, Shillings, and Pence *Sterling*; and their Marks are derived from their Names in Latin, viz. *l.* for *Libra*, or Pounds, *s.* for *Solidi*, or Shillings, *d.* for *Denarii*, or Pence, *qr.* for *Quadrantes*, or Farthings, four making a Penny; and expressed or set down thus: *l.* *s.* *d.* *qr.*

but better thus, — *l.* 4 16 8 $\frac{1}{2}$. The Mark for Pounds standing before the Sum denominates the first Number, and the others are known of course; for after Pounds follow Shillings, and after Shillings succeed Pence, &c. When the price of any thing is Shillings and Pence, it is set down thus,

s. d.

4 6

or thus, 4/6: and when Shillings and Pence, and parts or a Penny, expressed thus,

s. d.

4 6 $\frac{1}{2}$

or thus, $4/6 \frac{1}{2}$. The latter Way by some is accounted the neater, and the best Method to express parts of a Penny, or Farthings; thus,

$\frac{1}{2}$ a Farthing, or one fourth Part of what it follows.

$\frac{1}{2}$ a Halfpenny, or one Half of what it follows.

And being thus set Fraction-wise, the under Figure shews how many parts the Quantity before it is divided into; and the upper Figure shews how many of those under parts the Fraction stands for; $\frac{1}{2}$ of an Ell, $\frac{3}{4}$ of a Foot, or 9 Inches; and the same of a Shilling is 9 pence; of a Pound is 15s.

If you are to set down 6 Yards and a half, write thus, 6 $\frac{1}{2}$ Yds.

Nineteen Hundred three Quarters thus, 19 $\frac{3}{4}$ C

Sixteen Pounds and a Quarter thus, 16 $\frac{1}{4}$ lb.

or else thus, 16 C $\frac{1}{4}$, 16 lb. $\frac{1}{4}$, 5 Foot $\frac{1}{2}$, 14 Days $\frac{1}{2}$ —Here the name is put between the whole Number and the Fraction, which I think is the plainer and better Way: for Example 6 $\frac{1}{2}$ Hhds may, through Ignorance or Wilfulness, be read 6 half Hhds as well as 6 Hhds and a half; and at a certain place where I have had Business, the Wharfingers Clerks expressed their half Hhds in this manner.

Table of the Value of Gold and Silver.

			l.	s.	d.
Gold	{ 1 Pound is worth	-----	48	0	0
	{ 1 Ounce	-----	4	0	0
	{ 1 Penny-weight	-----	0	4	0
	{ 1 Grain	-----	0	0	6
Silver	{ 1 Pound is worth	-----	3	0	0
	{ 1 Ounce	-----	0	5	0
	{ 1 Penny-weight	-----	0	0	3
	{ 1 Grain	One-Eighth of a Penny.	0	0	0

A TABLE, exhibiting at one View the Value of any Number of Portugal Pieces of Gold, in English Pounds and Shillings.

Num. of Pieces	Portugal Pieces.											
	at 3 12 0			at 1 16 0			at 0 18 0			at 1 7 0		
	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.
1	3	12	0	1	16	0	0	18	0	1	7	0
2	7	4	0	3	12	0	1	16	0	2	14	0
3	10	16	0	5	8	0	2	14	0	4	1	0
4	14	8	0	7	4	0	3	12	0	5	8	0
5	18	0	0	9	10	0	4	10	0	6	15	0
6	21	12	0	10	16	0	5	8	0	8	2	0
7	25	4	0	12	12	0	6	6	0	9	9	0
8	28	16	0	14	8	0	7	4	0	10	16	0
9	32	8	0	16	4	0	8	2	0	12	3	0
10	36	0	0	18	0	0	9	0	0	13	10	0
20	72	0	0	36	0	0	18	0	0	27	0	0
30	108	0	0	54	0	0	27	0	0	40	10	0
40	144	0	0	72	0	0	36	0	0	54	0	0
50	180	0	0	90	0	0	45	0	0	67	0	0
60	216	0	0	108	0	0	54	0	0	81	0	0
70	252	0	0	126	0	0	63	0	0	94	0	0
80	288	0	0	144	0	0	72	0	0	108	0	0
90	324	0	0	16	0	0	81	0	0	121	0	0
100	360	0	0	180	0	0	90	0	0	135	0	0
200	720	0	0	360	0	0	180	0	0	270	0	0
300	1080	0	0	540	0	0	270	0	0	405	0	0
400	1440	0	0	720	0	0	360	0	0	540	0	0
500	1800	0	0	900	0	0	450	0	0	675	0	0
600	2160	0	0	1080	0	0	540	0	0	810	0	0
700	2520	0	0	1260	0	0	630	0	0	945	0	0
800	2880	0	0	1440	0	0	720	0	0	1080	0	0
900	3240	0	0	1620	0	0	810	0	0	1215	0	0
1000	3600	0	0	1800	0	0	900	0	0	1350	0	0
5000	18000	0	0	9000	0	0	4500	0	0	6750	0	0
10000	36000	0	0	18000	0	0	9000	0	0	13500	0	0

A TABLE for Buying or Selling any Commodity by the Great Hundred, which is 112 Pounds.

d. q.	l. s. d.	d. q.	l. s. d.	d. q.	l. s. d.	d. q.	l. s. d.	p. l. s. d.
0	1 0 2 4	1	2 18 4	1	5 14 4	1	8 10 4	
	2 0 4 8	2	3 0 8	2	5 16 8	2	8 12 8	
	3 0 7 0	3	3 3 0	3	5 19 0	3	8 15 0	
1	0 0 9 4	7	0 3 5 4	13	0 6 1 4	19	0 8 17 4	
	1 0 11 8	1	3 7 8	1	6 3 8	1	8 19 8	
	2 0 14 0	2	3 10 0	2	6 6 0	2	9 2 0	
	3 0 16 4	3	3 12 4	3	6 8 4	3	9 4 4	
2	0 0 18 8	8	0 3 14 8	14	0 6 10 8	20	0 9 6 8	
	1 1 1 0	1	3 17 0	1	6 13 0	1	9 9 0	
	2 1 3 4	2	3 19 4	2	6 15 4	2	9 11 4	
	3 1 5 8	3	4 1 8	3	6 17 8	3	9 13 8	
3	0 1 8 0	9	0 4 4 0	15	0 7 0 0	21	0 9 16 0	
	1 1 10 4	1	4 6 4	1	7 2 4	1	9 18 4	
	2 1 12 8	2	4 8 8	2	7 4 8	2	10 0 8	
	3 1 15 0	3	4 11 0	3	7 7 0	3	10 3 0	
4	0 1 17 4	10	0 4 13 4	16	0 7 9 4	22	0 10 5 4	
	1 1 19 8	1	4 15 8	1	7 11 8	1	10 7 8	
	2 2 2 0	2	4 18 0	2	7 14 0	2	10 10 0	
	3 2 4 4	3	5 0 4	3	7 16 4	3	10 12 4	
5	0 2 6 8	11	0 5 2 8	17	0 7 18 8	23	0 10 14 8	
	1 2 9 0	1	5 5 0	1	8 1 0	1	10 17 0	
	2 2 11 4	2	5 7 4	2	8 3 4	2	10 19 4	
	3 2 13 8	3	5 9 8	3	8 5 8	3	11 1 8	
6	0 2 16 0	12	0 5 12 0	18	0 8 8 0	24	0 11 4 0	

EXAMPLE.

First, at *5d. 3q.* the Pound, what is the Great Hundred? Look in the Table for *5d. 3q.* in the First Column, and against it in the Second, you shall find *2l. 13s. 8d.* and so much will 112 Pounds cost. Again if a Hundred Weight cost *4l. 8s. 8d.* find *4l. 8s. 8d.* and against it, in the Column towards the Left-Hand, you will find *9d. 2q.* and so much it is by the Pound.

Note, For every Farthing that one Pound doth cost reckon Two Shillings and Four Pence, and that is the Price of the Great Hundred.

IN.

INTEREST at Three per Cent.											
Principal	For One Day.				Thirty Days.				A Year.		
	l.	s.	d.	f.	l.	s.	d.	f.	l.	s.	d. f.
£ 1								2		7	1
2								1		1	2 1
3								1	3	1	9 2
4								2	1	2	4 3
5								3		3	
6								3	2	3	7 1
7								4		4	2 1
8								4	3	4	9 3
9								5	1	5	4 3
10								5	3	6	
20				1				11	3	12	
30				2				1	5	18	
40				3				1	11	1	4
50				1				2	5	1	10
60				1				2	11	1	16
70				1	1			3	5	2	2
80				1	2			3	11	2	8
90				1	3			4	5	2	14
100				2				4	11	3	
200				3	3			9	10	6	
300				5	3			14	9	9	
400				7	3			19	8	12	
500				10				1	4	15	
600				11	3			1	9	18	
700				1	1	3		1	14	21	
800				1	3	3		1	19	24	
900				1	5	3		2	4	27	
1000				1	7	3		2	9	30	
2000				3	3	2		4	18	60	
3000				4	11			7	7	90	
4000				6	6	3		9	17	120	
5000				8	2	2		12	6	150	

INTEREST at Four per Cent.												
Principal.	For One Day.				Thirty Days.				A Year.			
	l.	s.	d.	f.	l.	s.	d.	f.	l.	s.	d.	f.
£. 1								3			9	2
2								1 2		1	7	1
3								2 1		2	4	3
4								3 1		3	2	2
5								4 0		4		
6								4 3		4	9	2
7								5 2		5	7	1
8								6 1		6	4	3
9								7		7	2	2
<hr/>												
10				1				7 3			8	
20				2			1	3 3			16	
30				3			1	11 2		1	4	
40				1			2	7 2		1	12	
50				1 1			3	3 1		2		
60				1 2			3	11 1		2	8	
70				1 3			4	6 3		2	16	
80				2			5	3		3	4	
90				2 1			5	11		3	12	
<hr/>												
100				2 2			6	6 3		4		
200				5 1			13	1 3		8		
300				7 3			19	8 3		12		
400				10 2		1	6	3 2		16		
500				1 1		1	12	10 2		20		
600				1 3 3		1	19	5 1		24		
700				1 6 2		2	6	0 1		28		
800				1 9		2	12	7 1		32		
900				1 11 2		2	19	2		36		
1000				2 2 1		3	5	9		40		
2000				4 4 2		6	11	6		80		
3000				6 6 3		9	17	3		120		
4000				8 9		13	3			160		
5000				10 11 2		16	8	9 1		200		

Principal.	INTEREST at Five per cent.											
	for one Day.				Thirty Days.				A Year.			
£.	l.	s.	d.	f.	l.	s.	d.	f.	l.	s.	d.	f.
1							1				1	
2							2				2	
3							3				3	
4							3	3			4	
5							4	3			5	
6							5	3			6	
7							6	3			7	
8				1			7	3			8	
9				1			8	3			9	
10				1			9	3			10	
20				3		1	7	3		1		
30				1		2	5	2		1	10	
40				1	1	3	3	2		2		
50				1	2	4	1	1		2	10	
60				2		4	11			3		
70				2	1	5	9			3	10	
80				2	2	6	6	3		4		
90				3		7	4	3		4	10	
100				3	1	8	2	2		5		
200				6	2	16	5	1		10		
300				9	3	1	4	7	3	15		
400			1	1		1	12	10	2	20		
500			1	4	1	2	1	1		25		
600			1	7	3	2	9	3	3	30		
700			1	11		2	17	6	1	35		
800			2	1	1	3	5	9		40		
900			2	5	1	3	13	11	2	45		
1000			2	8	3	4	2	2	1	50		
2000			5	5	3	8	4	4	2	100		
3000			8	2	2	12	6	6	3	150		
4000			10	11	2	16	8	9	1	200		
5000			13	8	1	20	10	11	2	250		

A Hint of Generals, or Things proper to be known and remembered on particular Occasions.

- A Ream of Paper, 20 Quires.
 - A Quire of Paper, 24 Sheets.
 - A Bale of Paper, 10 Reams.
 - A Roll of Parchment, 5 Dozen, or 60 Skins.
 - A Dicker of Hides, 10 Skins.
 - Ditto of Gloves, 10 Dozen Pair.
 - A Last of Hides, 20 Dickers.
 - A Load of Timber unhew'd, 40 Feet,
 - A Chaldron of Coals, 36 Bushels
 - A Hogshead of Wine, 63 Gallons.
 - Ditto of Beer, 54 Gallons.
 - A Barrel of Beer 36 Gallons.
 - Ditto of Ale, 32 Gallons.
 - A Gros, 144, or 12 Dozen.
 - A Weigh of Cheese, 256 Pounds.
 - Days in the Year, 365, Weeks 52, and Hours 8766.
 - Pence in the Pound 240, Farthings 960.
 - An Acre of Land, 160 square Poles or Perches.
 - A Last of Corn or Rape-seed, 10 Quarters.
 - A Quarter in England, 8 bushels; in Scotland, 4 bolls; in Spain, about 139 Pounds weight of Corn.
 - Ditto of Pot Ashes, Codfish, White-herrings, Meal, Pitch, and Tar, 12 Barrels.
 - Ditto of Flax and Feathers, 17 C. of Gunpowder 24 Barrels or 2400lb. of Wool, 4368lb.
 - A Tun of Wine, 252 Gallons, Oil of Greenland, 252 Gallons, and sweet Oil of Genoa, 236 Gallons.
 - A Ton in Weight, 20 C. of Iron, &c. but of Lead there is but 19 C. and a Half called a Fodder or Fother.
 - A Todd of Wool, 28 Pounds.
 - A Pack of Ditto, 364 Pounds
 - A Load of Bricks 500, and of plain Tiles 1000.
 - A Stone of Fish 8lb. and of Wool, 14lb. The same for Horseman's Weight, and also Hay; but Pepper, Cinna-
mon, and Allum, have but 13lb. and a half to the Stone.
 - Ditto of Glass, 5 Pounds, and a Seam of ditto, 24 Stone.
 - A Truss of Hay, 56 Pounds; and a Load of ditto, thirty-nine Trusses.
- NOTE, New Hay in JUNE and AUGUST, ought to be 60 Pound to the Truss as per Statute of 2 WILLIAM and MARY, 1693.

A Cade of Red-Herrings, 500; and of Sprats, 1000, Iron, and Shot 14lb. to the Stone.

Barrells of sundry Commodities.

Anchovies, 30lb.

A double Barrel, 60lb.

Nuts or Apples, 3 Bushels,

Pot-ash or Barilla, 200lb.

White or Black Plates, 300

Candles, 10 doz. lb.

Salmon or Eels, 42 Gall.

Figs. 3 qrs. 14lb. to 2 C. 1-4

Things in Wholesale Trade, bought and sold by the Thousand.

Cuttle Bones

Oranges and Lemons.

Chair Nails.

Tacks and Tenter Hooks.

Pomegranates and Tazels.

Goose Quills and Thimbles

Pins and small Needles by the 1000 Dozen.

Things sold and bought at Six Score to the Hundred.

Banks and Barlings

Barrel and Pipe-Boards

Bompspars and Bow-staves

Canpars and Caprevans

Herrings and Deal Boards

Nails, Eggs and Cod-fish

Of Bonds, Bills, Indentures, Letters of Attorney, Wills, and other useful Writings.

Precedents of these are very necessary, not only for the understanding of them, but to know how to make them properly on Occasion.

A Bond from One to One.

K NOW all Men by these Presents, that I *Abraham Darnel*, of the Parish of *St Sepulchere's*, in the City of *London*, Gentleman, am held and firmly bound to *John Melvil*, of the said City of *London*, Esq; in the Sum of Fifty Pounds of good and lawful Money of *Great-Britain*, to be paid to the said *John Melvil*, or to his certain Attorney, his Executors, Administrators or Assigns; for the true Payment whereof, I bind myself, my Heirs, Executors and Administrators, firmly by these Presents sealed in the fifteenth Year of the Reign of our Sovereign Lord *George the Third*, by the Grace of God, of *Great-Britain*, *France* and *Ireland*, King, Defender of the Faith, and so forth, and in

Raisins, 1 C wt.

Oil 31 Gallons and half.

Spanish Tobacco, 2 C to 3 C.

Gunpowder, 1 C. wt.

Soap, 240lb.

Butter, 224 lb.

Herrings, 32 Gallons.

Bricks

Clinkers or Flanders Tiles

Billets and Leaves of Horn

Barrel Hoops

Squirrel Skins

Slate and Hilling Stones.

Cole, Ling, and Newfound.

land-fish, Stock-fish of all Sorts

Ells of Canvass, and most Foreign Linens

And Hoghead Staves.

the Year of our Lord, one Thousand Seven Hundred dan Seventy-five.

The Condition of this Obligation is such, That if the above bounden *Abraham Darnel*, his Heirs, Executors or Administrators, do well and truly pay, or cause to be paid to the above-named *John Melvil*, his Executors, Administrators, or Assigns, the full Sum of Twenty-five Pounds of good and lawful Money of *Great-Britain*, on the twentieth Day of *August* next ensuing the Date hereof, with the lawful Interest thereof: then this Obligation to be void, or else to remain, continue, and be in full Force and Virtue.

Sealed and Delivered

(being first duly stamped) in the

Presence of

Abraham Darnel. O

George Need Thomas Trusty,

Note. *The Mark O in this and the form subsequent, represents the Seal, which in this and all those in which it appears, ought to be affixed: the Person who executes any of them (a Will excepted, concerning which Directions will be given in its Place) is in the Presence of the Witnesses to take off the Seal (that is the Instrument with which the Impression was made) and then taking the Papet or Parchment, in his or her Right-hand, is to pronounce the Words, I deliver this as my Act and Deed for the Purposes within mentioned.*

A Bill with a Penalty.

KNOW all Men by these Presents, that I *John Jenkins*, of the City of *Chichester*, in the County of *Suffex*, Victualler, do acknowledge myself indebted to *Martin Moneyman* of *East-Grimstead*, in the County aforesaid, Grazier, in the Sum of twenty Pounds of good and lawful Money of *Great-Britain*, to be paid unto the said *Martin Moneyman*, his Heirs, Executors, Administrators or Assigns, in or upon the 29th Day of *September* next ensuing the Date hereof, without Fraud or further Delay: for and in Consideration of which Payment well and truly to be made and done, I bind myself, my heirs, Executors & Administrators, in the Penal Sum of Forty Pounds, of the like lawful Money, firmly by these Presents: In witness whereof I have hereunto set my Hand and Seal this twenty-fifth Day of *March*, in the fifteenth Year of the Reign of our Sovereign King *George the Third*, and in the Year of our Lord God 1779.

Signed, Sealed, and Delivered in the Presence of

John Jenkins. O

Titus Testimony. Andrew Affidavit.

A short Bill or Note of one's Hand.

KNOW all Men by these Presents, that I *Peter Pennylefs*, of the Parish of *St Saviour's Southwark*, in the County of *Surry*, Blacksmith, do owe, and own myself to stand indebted to *Robert Rich*, of the Parish of *St. Andrew Holborn*, in the County of *Middlesex*, Gent. in the just and due Sum of Five Pounds of lawful Money of *Great-Britain*, which by these presents I promise to pay unto him the said *Robert Rich*, at or upon the said sixth Day of *October* next ensuing the Date hereof: For the true performance of which payment, well and truly to be made, and in witness hereof I have set my Hand to these presents, the 5th day of *Jan.* 1779.

Peter Pennylefs

Among Men of Business the following Form is commonly used, and is equally effectually in Law:

I Promise to pay to Mr. *Robert Rich*, or his Order, the Sum of Five Pounds, five Months after Date, for Value received, this fifth day of *May*, 1779, by

Peter Pennylefs.

This Note is transferrable to another, if *Robert Rich* writes his Name on the Back thereof; but then if *Peter Pennylefs* doth not pay it, *Robert Rich* is liable thereunto.

A Penal Bill from Two to One.

KNOW all Men by these presents, That we *Laurence Luckles* and *Peter Pauper*, both of the parish of *St. Dunstan, Stepney*, in the County of *Middlesex*, Weavers, do acknowledge and own ourselves to stand indebted to *Gabriel Greedy*, of the parish of *St. Olave, Southwark*, in the County of *Surry*, Feltmaker, in the just and due Sum of ten pounds of good and lawful Money of *Great-Britain*, to be paid unto him the said *Gabriel Greedy*, his Heirs, Executors, Administrators, or Assigns, at or upon the thirteenth Day of *October*, next ensuing the Date hereof, without Fraud or further Delay; for, and in Consideration of which payment, well and truly to be made, we do bind our Heirs, Executors, and Administrators, in the penal Sum of twenty Pounds of the like lawful Money, firmly by these presents. In witness whereof, we have hereunto set our Hands and Seals, this sixteenth Day of *May*, in the Fifteenth Year of the Reign of our Sovereign Lord King *George* the Third, &c. and in the Year of our Lord One Thousand seven Hundred and Seventy-nine.

Signed, Sealed, and Delivered in the Presence of

Laur. Luckles, O

Peter Pauper. O

Wimbleton Witness. *Timothy Testis.*

Note, *That Bills without Penalty are of no more Force or lasting then Book Debts, as they are not sealed; yet they are esteemed better Security, because the Party's Hand, if he contends, may be proved against him, but oftentimes, on the Adjustment of Accounts, it is usual to have the party's Hand to the Book, which is as valid the other; but in my Opinion, there ought to be a Witness to either of them.*

Note also, *All Obligations must be in English, and the Words at Length; they may be suited to any Condition, by only altering the Name or Names, Place or Places of Abode, Title or Titles, Sum or Sums of Money, Date, &c.*

Every Bond, Letter of Attorney, Indenture, and other Thing to which a Seal is affixed, Wills excepted, must, to render it effectual, be stamped with a five Shillings Stamp.

Thus you may proceed of yourself, and save the Charge of going too far distant to a Scrivener or an Attorney, here being no other Charge necessary but the stamp'd paper, and your own Trouble of writing.

A Letter of Attorney.

K NOW all Men by these Presents, That I *Charles Careful* of *Lewes*, in the County of *Sussex*, Apothecary, (for divers Considerations and good Causes me hereunto moving) have made, ordained, constituted, and appointed, and by these Presents do make, ordain, constitute, and appoint, my trusty Friend *William Wagstaff*, of *Pemsey*, in the County aforesaid, Gentleman, my true and lawful Attorney, for me in my Name, and to my Use, to ask, demand, recover, or receive of and from *A. B. of Rye* in the said County, the Sum of Forty Pounds; giving, and by these presents granting to my said Attorney, my sole and full power and Authority, to take, persue, and follow such legal Courses, for the Recovery, Receiving, and obtaining of the same, as I myself might or could do, were I personally present; and upon the Receipt of the same, Acquittances, and other sufficient Discharges, for me, and in my Name, to make, sign seal, and deliver; as also, one or more Attorney or Attorneys under him to substitute or appoint, and again at his Pleasure to revoke; and further to do perform, and execute for me, and in my Name, all and singular Thing or Things, which are or may be necessary, touching and concerning the premisses, as fully thoroughly, and entirely, as I the said *Charles Careful*, in my own person, ought, or could do or cause to be done, in and about the same: Ratifying, Allowing, and Confirming whatsoever my said Attorney

shall lawfully do, or cause to be done, in and about the Execution of the premiffes, by virtue of thefe presents. In Witnefs whereof I have hereunto fet my Hand and Seal, the fixth Day of *May*, in the Fifteenth Year of the Reign of our Sovereign Lord *George* the Third, by the Grace of God King of *Great-Britain*, &c. and in the Year of our Lord One Thousand Seven Hundred and Seventy-five.

A Letter of Attorney by a Seaman.

KNOW all Men by thefe Presents, That I *Timothy Tarpaulin*, Mariner, now belonging to his Majesty's Ship the *Rye*, for divers good Causes and Considerations me thereunto moving, have, and by thefe Presents do make my trusty Friend *Henry Hearty*, Citizen and Broker of *London*, (or my beloved Wife *Penelope Tarpaulin*) my true and lawful Attorney, for me and in my Name, and for my Use, to ask, demand, and receive, of and from the Right Honourable the Treasurer, or Paymaster of his Majesty's Navy and the Commissioners of prize-money, and whom else it may concern, as well as all such Wages and Pay, Bounty-Money, Prize-money all other Sum or Sums of Money whatsoever, as now are, and which hereafter shall and may be due or Payable unto me; also all such Pensions Salaries, Smart-money, or all other Money and Things whatsoever, which now are, or at any Time hereafter shall or may be due to me, for my Service, or otherwise, in any one of his Majesty's Ship or Ships, Frigates or Vessels: Giving and hereby granting, unto the said Attorney full and whole power, to take, pursue, and follow such legal Ways and Courses, for the Recovery, Receiving and Obtaining, and Discharging upon the said Sum or Sums of Money, or any of them as I myself might or could do, where I personally present; and I do hereby ratify; allow, and confirm, all and what my Attorney shall lawfully do, or cause to be done, in and about the Execution of the premiffes, by Virtue of thefe presents. In Witnefs whereof I have hereunto fet my Hand and Seal, this twenty-second Day of *March*, One Thousand Seven Hundren and Seventy-five, &c.

Timothy Tarpaulin O

A short Will in Legal Form.

IN the Name of God, *Amen*. I *William Weakly*, of the City of *London*, Haberdasher, being very sick and weak in (or in perfect Health of) Body, but (or, and) of perfect Mind and Memory, Thanks be given unto God; calling unto mind the Mortality of my Body, and knowing that it is appointed for all Men once to die do make and ordain

this my last Will and Testament, That is to say, principally and first of all, I give and recommend my soul into the Hand of Almighty God that gave it, and my Body I recommend to the Earth, to be buried in decent Christian Burial, at the Discretion of my Executors; nothing doubting but at the general Resurrection I shall receive the same again, by the mighty Power of God. And as touching such worldly Estate where-with it has pleased God to bless me in this Life, I give, devise, and dispose of the same in the following Manner and Form:

First, I give and bequeath to *Elizabeth*, my dearly beloved Wife, the Sum of Five Hundred Pounds, of lawful Money of *England*, to be raised and levied out of my Estate, together with all my Household Goods, Debts, and moveable Effects.

Also, I give to my well beloved Daughter *Elizabeth Weakly*, whom I likewise constitute, make, and ordain the sole Executrix of this my last Will and Testament, all and singular my Lands, Messuages, and Tenements, by her freely to be possessed and enjoyed. And I do hereby utterly disallow, revoke, and disannul all and every other former Testaments, Wills, Legacies, Bequests, and Executors by me in any ways before named, willed and bequeathed; ratifying and confirming this, and no other, to be my last will and Testament. In Witness whereof I have hereunto set my hand & Seal, this twelfth day of *April* in the Year of our Lord One Thousand Seven Hundred and Seventy-five.

Signed sealed, published, pronounced and declared, by the said William Weakly, as his last Will and Testament, in the Presence of us, who in his Presence, and in the Presence of each other, have hereunto subscribed our Names

*Henry Hardy,
Samuel Short,
William Worle.*

The Testator, after taking off the Seal, must, in the presence of the Witnesses pronounce these Words, *I publish and declare this to be my last Will and Testament.*

Note, If a Will be already made, and the Person hath no Mind to alter it, but to add something more, there may be affixed the following Codicil or Schedule to it, and it will stand good in Law, as Part of the Will.

A Codicil to a Will.

Be it known to all Men by these Presents, That I *William Weakly*, of the City of *London*, Haberdasher, have made and declared my last Will and Testament in Writing, bearing Date the 12th Day of *April* One Thousand Seven Hundred and Seventy-nine. I the said *William Weakly*, by this present *Codicil*, do ratify and confirm my said last Will and Testament; and do further give and bequeath unto my loving Cousin and Godson *William Weakly*, junior, the Sum of Fifty Pounds of good and lawful Money of *England*, to be paid unto him the said *William Weakly*, by my Executrix, out of my Estate: And my Will and Meaning is, that this *Codicil* be adjudged to be a Part and Parcel of my last Will and Testament; and that all Things therein mentioned and contained be faithfully and truly performed; and as fully and amply in every respect, as if the same were so declared and set down in my said last Will and Testament. Witness my Hand this Twentieth Day of *April*, One Thousand Seven Hundred and Seventy-five.

Signed in the Presence

of us,

A. B.

C. D.

William Weakly.

A Deed of Gift.

TO all People whom these Presents shall come. I *George Generous* do send Greeting, Know ye, That I the said *George Generous*, of the Parish of *Panaras*, in the County of *Middlesex*, Brick-maker, for and in Consideration of the Love, Good-will, and Affection, which I have and do bear towards my loving Sister, *Sarah Sorrowful*, of the same Parish and County, Widow, have given and granted, and by these Presents do freely give and grant unto the said *Sarah Sorrowful*, her Heirs, Executors, or Administrators, all and singular my Goods and Chattels, now being in my present Dwelling-house in the Parish aforesaid, known by the Name of *Fisher's Figgary*, of which (before the Signing of these Presents) I have delivered her, the said *Sarah Sorrowful*, an Inventory signed with my own Hand, and bearing even Date, to have and to hold all the said Goods and Chattels in the said Premises or Dwelling house, to her the said *Sarah Sorrowful*, her Heirs, Executors, or Administrators, from henceforth, as her and their proper Goods and Chattels absolutely without any Manner of Condition. In witness whereof, I have hereunto put my Hand and Seal, this Tenth Day of *April*, One Thousand Seven Hundred and Seventy-nine.

Signed, Sealed, and Delivered in the Presence of

Daniel Drayton.

Aaron Atkins.

George Generous. O

Note, This Precedent may be extended to the giving away of Cattle, Corn, House or Land, if not entailed, &c. but the Particulars must be named, &c.

An Indenture of Apprenticeship.

THIS Indenture Witnesseth, That *Richard Reynolds*, Son of *Robert Reynolds*, late of *Pomfey* in the County of *Suffex*, hath put himself Appientice to *Charles Carpenter*, Citizen and Linen-draper of *London*, to learn his Art, Trade, or Mystery, and after the Manner of an Appientice to serve him from the Day of the Date hereof, for and during the full Term of Seven Years next ensuing: During all which Time, he the said Appientice his said Master shall faithfully serve, his Secrets keep, his lawful Commands every where gladly obey. He shall do no Damage to his said Master, nor see it to be done by others, without letting or giving Notice thereof to his said Master. He shall not waste his said Master's Goods, nor lend them unlawfully to others. He shall not commit Fornication, nor contract Matrimony within the said Term. At Cards, Dice, or any unlawful Game he shall not play, whereby his said Master may be damaged. With his own Goods, or the Goods of others during the said Term, without Licence of his said Master, he shall neither buy nor sell. He shall not absent himself Day nor Night from his said Master's Service without his Leave. Nor haunt Alehouses, Taverns, or Play-houses: But in all Things behave himself as a faithful Appientice ought to do, during the said Term. And the said Master shall use the utmost of his Endeavours to teach, or cause to be taught and instructed, the said Appientice in the Trade and Mystery he now professeth, occupieth, or followeth; and procure or provide for him the said Appientice, sufficient Meat, Drink, Apparel, Washing and Lodging, fittings for an Appientice; during the said Term. And for the true Performance of all and every the said Covenants and Agreements either of the said Parties bind themselves by these Presents.

In Witness whereof they have interchangeably put their Hands and Seals this 16th Day of *April*, in the 15th Year of the Reign of our Sovereign Lord *George III.* by the Grace of God, King of *Great-Britain*, &c. and in the Year of our Lord God, One Thousand Seven Hundred and Seventy-nine.

Note, If an Appientice be inrolled before a Justice of the Peace, or other proper Officer, (the Chamberlain being such in London) he cannot sue out his Indenture, but upon

Proof

Proof of unmerciful Usage, Want of Victuals, or other Necessaries, or his Master's being incapable of teaching him his Trade, or not chusing it so to be done at his proper Charge by others. And the same holds good in relation to a Mistress. But there being no Inrollment, an Indenture may be sued out without shewing Cause, in Cities and Corporations, &c.

A General Release.

K N O W all Men by these Presents, That I *Peter Peaceable*, of *Hastings*, in the County of *Suffex*, *Tobacconist*, have remised, released, and for ever quit Claim to *William Winter*, of *Rye*, in the County aforesaid, *Fish-Chapman*, his Heirs, Executors, and Administrators, of all and all Manner of Action and Actions, Suits, Bills, Bonds, Writings, Debts, Dues, Duties, Accompts, Sum and Sums of Money, Leases, Mortgages, Judgments by Confession or otherwise obtained, Executions, Extents, Quarrels, Controversies, Trespases, Damages, and Demands whatsoever, which by Law or Equity, or otherwise shiever, I the said *Peter Peaceable*, against the said *William Winter* ever had, and which I, my Heirs, Executors, or Administrators, shall or may claim, challenge, or demand, for or by Reason, or Means, Colour of any Matter, Cause, or Thing whatsoever, to the Day of the Date of these Presents. In Witness whereof I have hereunto set my Hand and Seal, this 15th Day of *April*, &c.

Peter Peaceable. O

XX

The Compleat GARDENER: Or, The Practice of Gardening in all its Branches, for the Twelve Months of the Year.

J A N U A R Y.

Pleasure Garden.

F R O S T is to be expected now, and nothing is so dangerous to tender Flower-roots, and their Shoots for Spring.

Ranunculuses, Anemonies and Tulips will be in danger, cover the Beds to guard them, lay on Pease-straw where they are not come up; but where the Shoots appear, place Hoops with Mats and Cloths upon them. This is the common Practice:

tice ; but in that excellent Work, *The Compleat Body of Gardening*, lately published, there is a new Method proposed and much easier and better. This is to place behind them a Reed-hedge, sloping three Feet forward. A Mat is to be let down from the Top in severe Weather, and taken up in mild. This certainly preserves them, and yet does not draw them weak, or make them tender.

Cover the Beds and Boxes of Seedling Flowers ; and take off the Defence when the Weather is milder.

Clean the Auricula-plants, pick-off dead Leaves, and scrape away the Surface of the Mould ; put fresh Mould in the Place of it, and set the Pots up to the Brim in the Mould in a dry Bed, and place behind them a Reed-hedge.

Cover Carnation-plants from Wet, and defend from Mice and Sparrows.

Kitchen Garden.

Throw up some new Dung in a Heap to heat, that it may be ready to make Hot-beds both for the early Cucumbers and Melons in this Part of the Ground, and for raising Seeds of Annuals in the Flower-garden.

Dig up the Ground that is to be sown with Spring crops, that it may lie and mellow.

Nurture the Cauliflower Plants kept under Glasses carefully ; shut out the Frost, but in the Middle of milder Days let in a little Air ; pick up the dead Leaves, and gather up the Mould about the Stocks.

Make a slight Hot-bed in the open Ground for young Salad-ing, and place Hoops over it, that it may be covered in very hard Weather.

Plant out Endive for Seed into warm Borders ; earth and blanch Celler-y.

Sow a few Beans and Pease, and seek and destroy Snails and other Vermin.

Orchard and Fruit-Garden.

Fruit-trees, whether in Orchards, or Espaliers, or against Walls, demand the same general Management.

Cut out dead Wood and irregular Branches, clean the Stumps, and Boughs from Moss with a hollow Iron, and repair Espaliers, fastening the Stakes and Poles with Nails and Wire, tying the Shoots down with Twigs of Osier.

Place Stakes by all new-planted Trees ; and cut Grafts to be ready, lay them in the Earth under a warm Wall.

FEBRUARY.

Pleasure-Garden.

Make Hot-beds for annual Flowers with the Dung laid up for that Purpose, and sow them upon a good Thickness of Mould, laid regularly over the Dung.

Trans-

Transplant perennial Flowers and hardy Shrubs, *Campanula*, Bells, Lilacs, and the like. Break up and new lay the Gravel Walks: Weed, rake, and clean the Borders, and where the Box of the Edging is decayed, make it up with a fresh Plantation.

Sow *Anticula* and *Polyanthus* Seeds in Boxes; these should be made of rough Boards six Inches deep, with Holes at the Bottom for the running off of Water; they must be filled with light Mould, and the Seeds scattered thinly over the Surface, then some more Mould must be sifted over them a Quarter of an Inch thick and they must be set where they may enjoy the Morning Sun.

Plant out Carnations into Pots for flowering.

Kitchen Garden.

Dig and level Beds for sowing Radishes and Onions, Carrots and Parsnips; and *Dutch Lettuce*, Leeks and Spinage, should also be sown now; also Beets, Salsafy, Sorrel and Marygolds, with any other of the hardy Kinds.

Make up the Hot-beds for early Cucumbers, and sow Calflovers-seeds and some others.

Plant Beans and sow Pease: the best Way in these useful Things is to sow a new Crop every Fortnight, that if one succeeds and another fails, as will often be the Case, there may still be a constant Supply at the due Season for the Table. Plant Kidney beans upon a Hot bed for an early Crop. The Dwarf, White, and *Batesey* Bean, are the best Sorts. They must have Air in the Middle of mild Days when they are up, and once in two Days they must be gently watered.

Transplant Cabbages, plant out *Silesia* and Cos-Lettuce from the Beds where they grew in Winter; and plant Potatoes and *Jerusalem Artichokes*.

Orchard and Fruit-Garden.

Most Kinds of Trees may now be pruned, though it be better to do it to the Generality in Autumn; whatever has been omitted at that Season in this Article, must be done now, the hardiest Kinds being pruned first, and such as are more tender at the latter End of the Month, when there will be little Danger of their suffering from the Frosts in the wounded Part.

Transplant Fruit trees to Places where they are wanted; opening a large Hole, settling the Earth carefully about their Roots, and nailing them at once to the Wall, or fastening them up to strong Stakes. Nail up the tenderer Trees with Care, and uncover the Fig-trees by Degrees, which have been protected from Frost by Mats. Sow the Kernels of Apples and Pears, and the Stones of Plumbs, for Stocks, and keep off Birds that eat Buds of Fruit-trees.

MARCH.

Pleasure-Garden.

Watch the Beds of tender Flowers, and throw Mats over them supported by Hoops in hard Weather.

Continue transplanting all the hardy perennial fibrous-rooted Flowers, Sweet-williams, Golden-roots, and the like.

Dig up the Earth with a Shovel about those which were planted in Autumn, and clean the Ground between them.

All the Pots of flowering Plants must now be dressed. Pick off dead Leaves, remove the Earth at the Top, and put fresh in the Place, then give them a gentle Watering, and set them in their Places for flowering. In doing this take Care the Roots are not wounded, and repeat the Watering once in three Days.

The third Week in March is the Time to sow Sweet Pease, Poppies, Catchflies, and all the hardy annual Plants.

The last Week is proper for transplanting Evergreens; and for this Purpose a showery Day should be chosen. New Hot-beds must be made to receive the Seedlings of annual Flowers raised in the former.

Kitchen Garden.

Sow in the Beds of the Kitchen-Garden some Carrots, and also the large Pease, Rouncevals and Grey.

In better Ground sow Cabbages and Savoy, also Carrots and Parsnips for a second Crop, and towards the End of the Month put in a large Parcel of Beans and Pease.

Sow Parsley and plant Mint.

Sow Cos and Imperial Lettuce; and transplant the finer Kinds.

In the Beginning of the Month sow Dutch Parsley for the Roots.

The last Week take the Advantage of Time, or the dry Days, and make Asparagus beds.

Clear up the Artichoke roots, slip off the weakest, and plant them out for a new Crop, leaving four from each good Root to bear; and from such as are weaker two.

Dig up a warm Border, and sow some French Beans. Let them have a dry Soil; and give them no Water till they appear.

Orchard and Fruit-Garden.

The Grafts which were cut off early and laid in the Ground to be ready for Use, are now to be brought into Service, those of the earliest Kinds are to be used first, and the Apple last of all.

This

This done, look to the Stocks that were inoculated the last Year, and take off their Heads. A Hand's Breath should be left on above the Place: This holds the Bud secure by tying to it, and the Sap rises more freely for its nourishment.

The Fruit-trees that were planted last *October* must be headed; and they should be cut down to almost four Eyes. Some leave only three, but four is much better, the Sap rises more freely.

A P R I L.

Pleasure-Garden.

Tie up some Stalks of tall Flowers to Sticks, cut these two Feet long, thrust them eight Inches into the Ground, and let them be hid among the Leaves.

Clean and rake the Ground between them.

Take off the Slips of Auriculas, and plant them out carefully for an Increase. Transplant perennial Flowers and Evergreens as in the former Months; and take up the Roots of Colchicams, and other autumnal bulbous Plants.

Sow *French* Honeyuckles, Wallflowers, and other hardy Plants upon the natural Ground; and the tenderer Kind on Hot-beds. Transplant those sown last Month into the second Hot-beds. Plant some Tuberose in a moderate Hot-bed, and sow Carnations and Pinks on the natural on open Borders.

Kitchen Garden.

Plant the large Crop of *French* Beans; and chose for them a dry warm Border. Plant Cuttings of Sage and other aromatic Plants. Sow Marrowfat-pease, and plant some Beans for a late Crop.

Sow Thyme, Sweet-marjoram, and Savory.

Prepare Dung for making Ridges to receive the Cucumber and Melon-plants designed for Bell or Hand-glasses.

Sow young Sallading once in ten Days; and sow some *Cos* *Silesia* Lettuces.

The Seeds of all Kinds being in the Ground look to the growing Crops. Clear away the Weeds every where among them, and dig up the Earth between the Rows of Beans, Pease, and all other Kinds that are planted at Distances. This gives them a strong Growth, and brings them much sooner in Perfection, than can be done by any other Method.

Draw up the Mould to the Stalks of the Cabbages and Cauliflower-plants; and in cold Nights over the Glasses cover the early Cucumbers and Melons.

Orchard and Fruit-Garden.

Look to the Fruit-trees against Walls and Espaliers. Take off all fore-right Shoots, and train such as rise kindly.

Thin Apricots upon the Trees, for there are usually many more

more than can ripen; and the sooner this is done, the better the others succeed.

Water new-planted Trees.

Plant Cuttings of Vines, and look over the grown ones. Nip off improper Shoots. When two rise from the Eye, always take off the weakest.

Weed Strawberry-beds; cut off the Strings; stir the Earth between them; and once in three Days water them.

Dig up the Earth in the Borders near Fruit-trees. Never plant any large Kind of Flowers on Kitchen Things upon them: And it is better if nothing be sown or planted on these Borders, they all starve the Fruit.

M A Y.

Pleasure-Garden.

Observe where the Leaves of Sowbreads are decayed, take up the Roots, laying them carefully by till the Time of planting.

Take up the Hyacinth-roots which have done flowering, and lay them sideways in a Bed of dry rich Mould, leaving the Stem and Leaves out to die away; this Practice greatly strengthens the Roots.

Roll the Gravel-walks carefully and frequently, and keep the Grass clean mow'd.

Clean all the Borders from Weeds; take off all stragling Branches from the large flowering Plants, and train them up in a handsome Shape.

Plant out *French* and *African* Marygolds, with other Annuals from the Hot-beds, the last Week of this Month, chusing a cloudy warm Day.

Tie up the Stalks of Carnations. Plant Cutting of the *Lychnis* and *Lychnidea*s, and sow the small Annuals, Candy-tuft, and *Venus* Looking-glass, in the open Ground.

Pot the tender Annuals, as *Balsams*, *Amaranths*, and the like, and set them in a Hot-bed Flame till Summer is more advanced for planting them in the open Ground.

Kitchen-Garden.

Water once in two Days the Pease, Beans, and other large growing Plants.

Destroy the Weeds in all Parts of the Ground, and dig up the Earth between the Rows, and about the Stems of all large Kinds.

Sow small Sallading once in ten Days, as in the former Month: And at the same Time chuse a warm Border, and sow some Purslain; sow also Endive, and plant Beans and Pease for a very large Crop; and *French* Beans to succeed the others. The great Care in these Kinds is, to have these several Products fresh and young throughout the Season.

Chuse

Chuse a moist Day, and an Hour before Sun-set plant out some Savoy's, Cabbages, and red Cabbages, draw the Earth carefully up to their Stems, and give them a few careful Waterings.

Orchard and Fruit-Garden.

If any fresh Shoots have sprouted upon the Fruit-trees in Espaliers, or against Walls, nip them off, and train the proper ones to the Wall or Poles, at due Distances, and in a regular Manner.

Look over Vines, and stop every Shoot that has Fruit upon it, to three Eyes beyond the Fruit. Then train the Branches regularly to the Wall, and let such as are designed for next Year's Fruiting, grow some Time longer; their Leaves will give a proper Shade to the Fruit.

Water the new-planted Trees, and keep the Borders about the old ones clear; and finally pick off Snails and other Vermin.

J U N E.

Pleasure-Garden.

Chuse the Evening of a mild showery Day, and plant out into the open Ground the tender Annuals hitherto kept in Pots in the Hot-bed Frame; they must be carefully loosened from the Sides of the Pot, and shaken out with all the Mould about them: A large Hole must be opened for each; they must be placed upright in it, and when settled in the Ground, by a gentle Watering, must be tied up to Sticks.

Let Pinks, Carnations, and Sweet-williams, be laid this Month for an Increase. Let the Layers be covered lightly, and watered every other Day a little at a Time.

The Spring Flowers being now over, and their Leaves faded, the Roots must be taken up and laid by for planting again at a proper Season. Snow-drops, Winter-aconite, and the like, are to be thus managed.

The Hyacinth Roots, laid flat in the Ground, must now be taken up, the dead Leaves nipped off, and the Mould; and when clean they must be laid upon a Mat in an airy Room to harden, and then laid by.

Tulip Roots must now be taken up also as the Leaves decay; and the like Method must be followed with Anemonies and Ranunculuses.

Cut the Cups or Pods of the Carnations that are near blowing, in three or four Places, that they may blow regularly.

Inoculate of the fine Kinds of Roses.

Kitchen-Garden.

Transplant the Cauliflower Plants sown in May. Give them a rich Bed and frequent Waterings.

Plant

Plant out Thyme and other savoury Plants sown before, and in the same Manner shade and water them.

Take the Advantage of some cloudy Weather to sow Turnips; and if there be no Showers, water the Ground once in two Days.

Sow Broccoli upon a rich warm Border, and plant out Celery for blanching. This must be planted in Trenches a Foot asunder in the Rows.

Endive should also be planted out for blanching; but in this the Plants should be set fifteen Inches asunder, and at the same Time some Endive-feed must be sown for a second Crop. Pick up Snails; and in the damp Evenings kill the naked Slugs.

Orchard and Fruit-Garden.

Repeat the taking off fore-right Shoots upon a Wall and Espalier-trees, which we directed last Month; Train proper Branches to their Situation, where they are wanted; once again thin the Wall Fruit; leave Nectarines at four Inches Distance, and Peaches at five; none nearer; the Fruit will be finer and the Tree stronger for next Year.

Inoculate the Apricots, and chuse for this Operation a cloudy Evening. Water new-planted Trees, and pick up Snails and Vermin.

J U L Y.

Pleasure-Garden.

Roll the Gravel frequently, and mow the Grass.

Clip Box Edgings; cut and trim Hedges; and look over all the Borders; clearing them from Weeds, and stirring up the Mould between the Plants.

Inoculate Roses and Jessamines of all the Kinds that require this Propagation; and any of the other flowering Shrubs.

Take up the Roots of Fritillaries and Maragons, and others of this Sort that are past flowering some Time.

Gather the Seeds of the Flowers you design to propagate, and lay them upon a Shelf in an airy Room in the Pods. When they are well hardened, tie them up in Paper-bags, and do not take them out of the Pods till they are to be sown.

Lay Pinks and Sweet-williams, as the former in Earth. Cut down the Stalks of those Plants which have done flowering, and which you do not keep for Seed; and tie up those now coming into Flower to Sticks, as we directed for the earlier Kinds.

Sow Lupines, Larkspurs, and the like, on dry, warm Borders, to stand the Winter, and flower early next Year.

Kitchen-Garden.

Sow a Crop of French Beans to come in late, when they will be very acceptable.

Clear all the Ground from Weeds.

Dig between the Rows of Beans and Pease mow the Ground also about the Artichokes among the Cabbage Kinds.

Water the Crops in dry Weather.

Spinage-ferd will be ready for gathering now, as also that of the *Welsh Onion* and some others; take them carefully off, and dry them in the Shade.

Take up large Onions, and spread them upon Mats to dry for the Winter.

Clear away the Stalks of Beans and Pease that have done bearing.

Water the Melons as they ripen, and give them very little Water.

Water Cucumbers more freely.

Orchard and Fruit-Garden.

Inoculate Peaches and Neectarines.

Take off all fore-right Shoots in the Espalier and Wall-fruit Trees.

Hang Phials of Honey and Water upon the Fruit Trees, and look carefully for Snails. Keep the Borders where the Fruit-trees stand, clear from Weeds, and stir the Earth about them. This will greatly assist the Fruit in ripening.

Look to the Fruit-trees that have been grafted and budded the last Season. See that there are no Shoots from the Stocks. Whenever these rise take them off, for they will rob the intended Growth of its nourishment.

Look carefully to the new-planted Trees; water them often, and whatever Shoots they properly make, fasten to the Wall or Espalier.

Repeat the Care of the Vines, take off improper Shoots, and nail any that are loose to the Wall. Let no Weeds rise in the Ground about them, for they will exhaust the Nourishment and impoverish the Fruit.

A U G U S T.

Pleasure-Garden.

See whether the Layers of Sweet-williams, Carnations, and the like, be rooted; transplant such as are, and give frequent gentle Watering to the others to promote it.

Dig up a mellow Border, and draw Lines at five Inches Distance lengthwise and across; in the Centre of these Squares plant the Seedling Polyanthus, one in each Square.

In the same Manner plant out the Seedling Auriculas. Shade them till they have taken Root, and water them once in twenty-four Hours.

Cut down the Stalks of Plants that have done flowering. Save the Seeds you want as they ripen.

Water the tender Annuals every Evening.

Sow Anemones and Ranunculuses, as also Fritillary, Tulip, and Narcissus Seed.

Dig up a Border for early Tulip-roots, and others for Hyacinthis, Anemones, and Ranunculuses. Sow Annuals to stand through the Winter, and shift Auriculas into fresh Pots.

Kitchen

Kitchen Garden.

Sow some Spinage upon a rich Border, and on such another sow Onions. Those two Crops will live through the Winter, unless very severe, and be valuable in Spring. The second Week in August sow Cabbage-seed of the early Kinds; and a Week after that sow Cauliflower-seed. This will afford the Plants that are to be nursed up under Bell-glasses in the Winter. Some of these may also be ventured in a very well defended Situation open. The last Week of this Month sow another Crop, to supply the Place of these in case of Accidents; for if the Season be very severe, they may be lost, and if very mild, they will run to Seed in Spring. These last Crops must be defended by a Hot-bed Frame, and they will stand out and supply Deficiencies.

Sow Lettuces, the Cabbage and brown Dutch Kinds in a warm and well-sheltered Piece of Ground.

Transplant some of the Lettuces sown earlier in warm and well-sheltered Borders.

Take up Gatlick, and spread it on a Mat to harden; in the same Manner take up Onions and Rocambole; and, at the latter End of the Month, Shalots.

Orchard and Fruit-Garden.

Watch the Fruit on your Wall-trees, and keep off Devourers, of which there are numberless Kinds now swarming about them. Shoot all Birds, pick up Snails, and hang Bottles of sweet Water for Flies and Wasps.

Fasten loose Branches, and gather the Fruit carefully as it ripens.

Once more go prune the Vines, and pull off those trailing Branches so very luxuriantly produced at this Time. See that the Fruit is not shaded by loose Branches, and keep the Borders clear of Weeds. This tends more than is imagined to the well-ripening of the Fruit.

S E P T E M B E R.

Pleasure-Garden.

A new Kind of Work begins this Month; which is, preparing for the next Season. Tear up the Annuals that have done flowering, and cut down such Perennials as are past their Beauty, bring in other Perennials from the Nursery Beds, and plant them with Care at regular Distances.

Take up the Box-edgings where they are out-grown their proper Size, and part and plant them fresh.

Plant Tulips and other Flower Roots.

Slip Polyanthus, and place them in rich shady Borders. Sow the Seeds of Flower-de-luces and Crown imperial, as also of Anemones, and Polyanthus according to the Method we delivered before.

Also part the Roots of Flower-de-luces, Piony, and others of these Kinds. In the last Week transplant hardy flowering Shrubs, and they will be strong next Summer.

Sow

Kitchen Garden.

Sow Lettices of various Kinds, *Silesia*, *Cos*, and *Dutch*; and when they come up shelter them carefully. The common Practice is to shelter them under Hand-glasses; but they will thrive better under a sloping Reed-hedge, such as we described before.

Make up fresh warm Beds with the Dung that has lain a Month in the Heap. Plant the Spawn in these beds upon Pasture Mould, the same they were found in; and raise the Top of the Bed to a Ridge, to throw off Wet.

Look to the Turnip-beds and thin them, leave the Turnips at six Inches Distance.

Weed the Spinage, Onions, and other new sown Plants.

Transplant Sage, Lavender, and sweet Plants. Earth up the Celery as it grows up in Height.

Sow young Sallading upon warm and well sheltered Borders.

Clean Asparagus Beds in this Manner:—Cut down the Stalks, and pare the Earth off the Surface of the Alleys, throw this upon the Beds half an Inch thick, and sprinkle over it a little Dung from an old Melon Bed.

Dig up the Ground where Summer Crops have ripen'd; and lay it in Ridges for the Winter. These should be disposed East and West, and turned once in two Months, they have thus the Advantage of a Fallow.

Orchard and Fruit-Garden.

The Fruit must now be gathered with Care every Day, and the best Time is an Hour after Sun-rise. Then it should be laid in a cool Place till used. Such as is gathered in the Middle of the Day is always flabby.

Keep Birds from the Grapes, for as they now begin to ripen they will be in continual Danger.

Transplant Gooseberries and Currants, and plant Strawberries and Raspberries; they will be rooted before Winter, and flourish the succeeding season.

OCTOBER.

Pleasure-Garden.

Let all the bulbous Roots for Spring flowering be put into the Ground, *Narcissus*, *Maragon*, *Tulips*, and such *Ranunculus*es and *Anemones* as were not planted sooner.

Transplant *Columbines*, *Monks-hood*, and all Kinds of fibrous-rooted Perennials.

Place the *Auriculas* and *Carnations* that are in Pots under Shelter.

Some lay the Pots on one Side, but that spoils the End for next Year's flowering. The best Way is by Means of a sloping Reed-hedge. Dig up a dry Border, and if not dry e-

H h

nough

rough naturally, dig in some Sand. In this set the Pots up to the Brim. Place the Reed-hedge sloping behind them, and fasten a Mat to its Top that may be let down in bad Weather.

Take off the dead Leaves of the Auriculas before they are thus planted.

Bring into the Garden flowering Shrubs wherever they are wanted, and at the End of the Month prune some of the hardier Kind.

Kitchen Garden.

Plant out the Cauliflower Plants where they are to be sheltered; and it will be proper to plant two for each Glass, where that Method is used, for fear of one failing.

Sow another Crop of Pease, and plant more Beans; chuse for these a dry Spot, and well sheltered from the cold Winter.

Transplant the Lettuces sowed last Month, where they can be defended by a Reed-hedge, or under Walls.

Transplant Cabbage-plants and Coleworts where they are to remain.

Take great Care of the Cauliflower-plants sown early in Summer; they now begin to shew their Heads, so break in the Leaves upon them to keep off the Sun and Rain; it will both harden and whiten them.

Orchard and Fruit-Garden.

Prune the Peach and Nectarine Trees and the Vines.—This is a very useful Practice, for it strengthens the Buds for Spring.

Cut Grapes for preserving, with a Joint of the Vine to each Bunch.

Gather Fruits for Winter-keeping as they ripen. Transplant all Garden-trees for flowering; prune Currant bushes, and preserve the Stones of Fruit for sowing.

N O V E M B E R.

Pleasure-Garden.

Throw together a good Heap of Pasture-ground, with the Turf among it, to rot for Mould for the Borders.

Transplant Honeyuckles and Spireas, with other hardy flowering Shrubs.

Rake over the Beds of seedling Flowers, and strew some Pea-straw over them to keep out the Frost.

Cut down the Stem of Perennials which have done flowering; pull up Annuals that are spent, and rake and clear the Ground.

Place Hoops over the Beds of Ranunculuses and Anemones, and lay Mats or Cloths in Readiness to draw over them, in case of hard Rains or Frost.

Clean up the Borders in all Parts of the Garden, and take Care to destroy not only the Weeds, but all Kinds of Mobs.

Look over the Seeds of those Flowers which were gathered in Summer. See they keep dry and Sweet, and in a Condition of Growth, and dig a Border or two for the hardier Kinds.

Kitchen Garden.

Seed the Crops of Spinage and such other Kinds as were sown late, for the wild Growth will else smother and starve the Crop.

Dig up a Border under a warm Wall, and sow some Carrots for Spring; sow Radishes in such another Place, and see the Ground be well and deep dug for both. Turn the Mould that was trenched and laid up for fallowing; this destroys Weeds, and prepares the Soil to be enriched by the Air.

Prepare some Hot-beds for Sallading; cover them 5 Inches with Mould, and sow upon them some Lettices, and the common small Sallading, Mustard Rape, Cresses, and Radish.

Plant another Crop of Beans; and sow more Peas for a Succession.

Trench the Ground between the Artichokes, and throw a thick Ridge of Earth over the Roots. This will preserve them from the Frost, and prevent their shooting at an improper Time.

Make Hot-beds for forced Asparagus.

Take up Carrots and Parsnips, and lay them in Sand to be ready for Use. Give Air at Times to Plants under Hand-glasses and in Hot-beds, or they will suffer as much by want of that, as they would have done by the Frost.

Orchard and Fruit-Garden.

Stake up all Trees planted for Standards, or the Winds will rock them at the Bottom, and the Frost will be let in and destroy them.

Throw a good Quantity of Peas-straw about them, and lay on it a good Quantity of Brickbats or Pebbles to keep it fast; this will mellow the Ground, and keep out the Frost.

Continue to prime Wall-fruit Trees, and prune at this Time also the Apple and Pear Kinds. Pull off the late Fruit of Figs, it would decay and rot the Branches.

DECEMBER.

Pleasure-Garden.

Draw the Mats and Cloth over the Ranunculus and Anemone beds in severe Weather, whether Frost or cold Rains; but give them Air in the Middle of every tolerable Day, and as soon as possible, uncover them all Day; but draw on the Mats against Night.

Throw up the Earth where flowering Shrubs are to be planted in Spring; and once in a Fortnight turn it.

Dig up the Borders that are to have Flower-roots planted in them in the Spring, and give them the Advantage of a Fallow, by throwing up the Ground in a Ridge. Scatter over it

a very little rotten Dung from a Melon bed, and after this turn it twice during the Winter.

Look over the flowering Shrubs and prune them. Cut away all dead Wood, shorten luxuriant Branches, and if any cross each other, take away one. Leave them so that the Air can have free Passage between them.

Sift a Quarter of an Inch of good fresh Mould over the Roots of Perennial Flowers whose Stalks have been cut down, and then rake over the Borders. This will give the whole an Air of Culture and good Management, which is always pleasing.

Kitchen Garden.

Plant Cabbages and Savoy's for Seed. This is to be done with great Care; dig up a dry Border, and break the Mould very well; then take up some of the stoutest Cabbage and Savoy Plants; hang them up by the Stalks five Days, and then plant them half way of the Stalk into the Ground, draw up a good Quantity of the Mould about the Part of the Stalk that is out of the Ground, and make it into a kind of Hill round each; then leave them to Nature.

Sow another Crop of Pease, and plant another Parcel of Beans to take their Chance for succeeding the others.

Make another Hot-bed for Asparagus, to yield a Supply when the former is exhausted. Continue to earth up Cillery, and cover some Endive with a good Quantity of Pease-straw, as it is growing, that you may take it up when wanted, which otherwise the Frost will prevent.

Orchard and Fruit-Garden.

Prepare for planting Trees where they will be wanted in Spring, by digging the Ground deep, and turning it well now in the Places where they are to stand.

Scatter over the Borders where the Fruit-trees are planted some fresh Mould, and some old Dung, and in a mild Day dig it in with a strong three-pronged Fork.

Look over the Orchard Trees, and cut away superfluous and dead Wood. Let the Branches stand clear of one another, that the Air may get between; and the Fruit will be better flavoured.

This is the Management of old Trees, and new planted ones are to be preserved by covering the Ground at their Roots.

T H E
FAMILY's Best COMPANION:
G I V I N G
I N S T R U C T I O N S

How to Pickle and Preserve, to make divers Sorts of Wine of our *English* Product; together with many excellent and approved Medicines, Salves, &c. necessary in all Families.

AS many Things have been spoken of for the Information of the younger Sort of the Male Kind, so it may not be amiss to say some small Matter in Relation to the Instruction and Benefit of the Female Kind. And first,

Of Pickling, Preserving, Candyng, &c.

To Pickle Cucumbers.

WASH them, and dry them in a Cloth; then take Water, Vinegar, Salt, Fennel-tops, some Dill-tops, and a little Mace; make it sharp enough to the Taste; then boil it a while; then take it off, and let it stand till cold; then put in the Cucumbers, and stop them down close, and within a Week they will be fit to eat.

To Pickle Cucumbers Green.

Take two Quarts of Verjuice or Vinegar, and a Gallon of fair Water, a Pint of Bay-salt, a Handful of Green Fennel, or Dill; boil it a little, and, when cold, put it into a Barrel, and then put the Cucumbers to the Pickle, and you may keep them all the Year.

To Pickle French Beans.

Take them while young, and cut off the Stalks; then take good Vinegar, and boil it with Pepper and Salt; season it to your Palate, and let it stand till cold; then take the Beans, and put them into a stone Jar, placing Dill between the Layers, and then put in the Pickle, and cover them close for three Weeks; then take the Pickle and boil it again, and put it to the Beans boiling hot; cover them close, and when cold, they will be fit to eat.

Or *French Beans* may be pickled thus: — Take your Beans and string them; boil them tender, then take them off, and let them stand till cold; then put them into Pickle of Vinegar, Pepper, Salt, Cloves, Mace, and a little Ginger.

To Pickle Elder, or any other Buds of Trees.

Give them one or two Walms with Vinegar, Salt, whole Pepper, long Mace, and a little Lemon-peel in Pieces; then drain them, and let the Buds and Liquor cool separately; afterwards put them into a Jar, and cover them with your Pickle.

To Pickle Walnuts to eat like Mangoes.

Take green Walnuts before the Shell is grown to any Hardness in them; pick them from the Stalks, and put them into cold Water, and set them on a gentle Fire till the outward Skin begins to peel off; then with coarse Cloths wipe it off; then put them into a Jar, and put Water and Salt therein, shifting it once a Day for ten Days, till the Bitterness and Discolouring of the Water be gone; then take a good Quantity of Mustard-seed, which beat up with Vinegar, till it becomes coarse Mustard; then take some Cloves of Garlic, some Ginger, and a little beaten Cloves and Mace; make a Hole in each Nut, and put in a little of this; then take White-wine Vinegar, and boil them together, which put to the Nuts boiling hot, with some Pepper, Ginger, Cloves, and Mace, as also some of the Mustard and Garlic, which keep close stopp'd for Use.

To Pickle Mushrooms.

First blanch them over the Crowns and barb them beneath, then put them into a Pan of boiling Water, then take them forth, and let them drain; when they are cold, put them into your Jar or Glass, and put to them Cloves, Mace, Ginger, Nutmeg, and whole Pepper; then take White-wine, a little Vinegar, and Salt: So pour the Liquor into the Mushrooms, and stop them close for Use.

To Pickle any Sort of Flowers for Sallads, as Gilly-Flowers, &c.

Put them into a Gally-pot with as much Sugar as they weigh; fill them with Wine Vinegar; to a Pint of Vinegar, a Pound of Sugar.

To Pickle Samphire, Broom-buds, Aspen-keys, Purslain, &c.

Take Samphire, and pick the Branches from the dead Leaves; then lay it in a Pot, and make a strong Brine of Water and Bay-salt: In the boiling scum it clean; being boiled, and cold, put it to the Samphire; cover it, and keep it for all the Year; and when there is Occasion to use it, take and boil

boil it in fair Water, but the Water must boil before you put it in; and when it is boiled and become green let it cool; then take it out, and put it into a wide-mouth'd Glass, and put strong Wine-vinegar to it, and keep it close for Use.

To Pickle Lemon and Orange Peel.

Boil them in Vinegar and Sugar, and put them into the same Pickle: Observe to cut them in small long Thongs, the Length of half the Peel of your Lemon: It ought to be boiled in Water before it is boiled in Vinegar and Sugar.

To preserve green Apricots.

Take them when they are small and tender; peel them and put them in hot Water, but let them not boil; let them lie there till they begin to be green, then take them out and put them in cold Water, then boil your Sugar, and let your Apricots run a little of the Water from them, then put them into the Sugar, and let them boil till the Syrup becomes thick; then put them into an earthen Pan, and let them remain there a Week; then put them into a preserving Pan, and make them boil again till the Syrup grows thick; then put them once more into an earthen Pan, and let them stand till they are cold; then take them out of their Syrup, and lay them on your Ardoise; then dry them in your Stove, and turn them often till dry; then put them in Boxes on Paper.

To preserve Fruit green.

Take Pippins, Apricots, Pears, Plumbs, or Peaches, when they are green; scald them in hot Water, and peel them; then put them into another Water, not so hot as the first; then boil them very tender and take the weight of them in Sugar, and add to them as much Water as will make a Syrup to cover them; then boil them somewhat leisurely and take them up; then boil the Syrup till it be somewhat thick, and when cold, put them in together.

To preserve Raspberries.

Take good Raspberries that are not too ripe, but very whole; take away the Stalks, and put them into a flat-bottom'd earthen Pan; boil Sugar, and pour it over your Raspberries, then let them stand to be cool, and when they are cold, pour them softly into your preserving Pan, and let them boil till their Syrup be boiled pretty thick; scum them very well in the boiling; this done, put them into Pots, and when cold, cover them up close for Use.

To preserve Barberries.

Take one Pound of Barberries picked from the Stalks, put them into a Pottle Pot, and set it in a Brass Pot full of hot Water, and, when they are stewed, strain them, and put to the Barberries one Pound and a half of Sugar, and to them put a Pint of red Rose Water, and boil them a little; then take half a Pound of the fairest Clusters of Barberries you can get, and dip them in the Syrup while it is boiling; then take the Barberries out, and boil the Syrup till it is thick, and when cold, put them in Glasses with the Syrup.

To preserve Currants. Lay a Layer of Currants, and then a Layer of Sugar, and so boil them as before prescribed for Raspberries; scum them in boiling, till the Syrup is pretty thick; then take them off, and, when they are cold, put them into Gallipots, or Glasses, closely stopped.

To preserve Walnuts green. Boil the Walnuts till the Water is bitter, then take them off, and put them into cold Water; peel off the Bark, and weigh as much Sugar as they weigh, and a little more Water than will wet the Sugar; set them on the Fire, and when they boil up take them off, and let them stand two Days, and then boil them again.

To preserve Cherries. First take some of the worst Cherries, and boil them in fair Water, and, when the Liquor is coloured, strain it; then take some of the best Cherries, with their Weight in beaten Sugar; then lay one Layer of Sugar, and another of Cherries, till all are laid in the preserving Pan; then pour a little Liquor of the worst Cherries into it, and boil the Cherries till they are well-coloured; then take them up and boil the Syrup till they will button on the Side of a Plate, and, when they are cold, put them up in a Glass close covered for Use.

To candy Cherries. Take Cherries before they be full ripe, and take out the Stones; then take clarified Sugar boiled to a Height, and pour it on them.

To candy Pears, Plumbs, Apricots, &c. Take them and give every one a Cut half through; then cast Sugar on them, and bake them in an Oven, as hot as for Manchet, close stopped; let them stand half an Hour, then lay them one by one upon Glass Plates to dry, and they will appear very fine and clear. In this manner you may candy any other Fruit.

To candy Flowers. Pick them very clean, and to every Ounce of Flowers put two Ounces of hard Sugar, and one Ounce of Sugar-candy, and dissolve them in Rose-water; then boil them, till they come to Sugar again, and, when it is almost cold, put in your Flowers, and stir them together, &c.

Of the making fundry Sorts of *English* Wines.

Current Wine.

PICK the Currants (when they are full ripe) clean from the Stalks, then put them into an earthen Vessel, and pour on them fair and clean hot Water, that is a Quart of Water to a Gallon of Currants; then bruise or mash them together, and let them stand and ferment; then cover them for 12 Hours, strain them through fine Linen into a large earthen Crock (as they say in *Suffex*) and thereto put a little Ale-yest, and, when worked, and settled, bottle it off; This is exceeding pleasant, and very wholesome for cooling the Blood; in a Week's Time it will be fit for bottling.

Arti-

Artificial Claret. Take six Gallons of Water, two Gallons of the best Cyder, and thereto put eight Pounds of the best Malaga Raisins bruised; let them stand close covered in a warm Place for two Weeks, stirring them every two Days well together; then press out the Liquor into a Vessel again, and add to it a Quart of the Juice of Barberries, and a Pint of the Juice of the Brambleberries, or Raspberries, (which perhaps is the best) to which put a Pint of the Juice of black Cherries; Work it up with Mustard-seed covered with Bread paste for three or four Days by the Fire side; after which let it stand a Week, then bottle it off, and it will become near as good as, if not exceed, common Claret.

Gosberry Wine. The best Way is to take to every 3 Pounds of Fruit, one Pound of Sugar, and a Quart of fair Water boiled very well; but you must put the aforesaid Quantity of Sugar when it is boiled; bruise the Fruit, and steep it twenty-four Hours in the Water; stir it sometimes, then strain it off, and put the Sugar to it, and let it stand in a Runlet close stopp'd for a Fortnight; then draw it off, and set it up in a cool Cellar, and in two Months it will be fit to drink.

Raspberry Wine. Take the Raspberries clear from the Stalks; to a Gallon of which put a Bottle of White-wine, and let them infuse in an earthen Vessel, two or three Days, close covered; then bruise the Berries in the Wine, and strain it through fine Linen gently, then let it simmer over a moderate Fire; scum off the Froth, and then strain it again, and with a Quarter of a Pound of Loaf Sugar to a Gallon, let it settle; then in half a Pint of White-wine boil about an Ounce of well-scented Cinnamon, and a little Mace, and put the Wine strained from the Spice into it, and bottle it off.

Damson Wine. Dry the Damsons in an Oven after you have drawn your Bread, then to every Quart of Damsons put three Quarts of fair Water, but first boil it very well; then put the Water and Damsons into a Runlet with Sugar; and having stood a Time sufficient, bottle it off.

Wine of Grapes. When they are fully ripe, in a dry Day, pick off those Grapes that are ripest, and squeeze them in a Vat or Press made for that Purpose, in which must be a fine Canvas Bag to contain the Grapes; and, when in the Press, do not squeeze them so hard as to break the Stones if you can help it, because the bruised Stones will give the Wine a disagreeable Taste: Then strain it well, and let it settle on the Lees, in such a Cask or Vessel as you may draw it off without raising the Bottom; then season a Cask well with some scalding Water, and dry it or scent it with a Linen Rag dipped in Brimstone, by fixing it at the Bouge, by the Bung or Cork; then put the Wine into it, and stop it close for 48 Hours; then give it Vent at the Bouge, with a Hole made with a Gimblet; in which put a Peg or Faucet, that may easily be moved with the Fingers; then in about two Days Time close it up; and in about two or three Months Time it will be fit for drinking, and prove almost as good as French Wine.

Wine

Wine of Strawberries or Raspberries. Mash the Berries, and put them into a Linen Bag, as aforesaid for the Grapes, and squeeze them into a Cask, and then let it work, as aforesaid, in the Grape Receipt, &c. In this manner may Cherry-wine be made; but then you must break the Stones, contrary to what was said before concerning the Grapes.

A short Way for Cherry Wine. Squeeze the Juice of Cherries into a Cask, and thereto put a small Quantity of Sugar, corresponding to the Quantity of Juice; and, when stood a Month, it will be a pleasant Liquor.

Black Cherry Wine. In the same Manner, take a Gallon, or more, of the Juice of Black Cherries, and keep it in a Vessel close stopped, till it works; and after it is fine, add an Ounce of Sugar to each Quart, and a Pint of White-wine.

To make Cyder. Grind, stamp, or pound your Apples, and put them into a Press, and squeeze them through Hair Bags into a Tub; and let it settle, and according to your Quantity of Juice, put in some Sugar at Discretion; then work it up with Ale-yest, and let it stand a Week; then prepare your Vessels according to the Quantity, clean and dry; then put it up; after which, put into a Bag two Pounds of stoned Raisins, two Ounces of whole Ginger, and two Ounces of Isinglass, and see it tied tight with a strong String fixed without side the Barrel, that the Bag may sink to the Bottom; and after two Months it will be fit for Use.

Mead. Take six Gallons of Water, and thereto put six Quarts of Honey, stirring it till the Honey is thoroughly mixed; then set it over the Fire, and, when ready to boil, scum it very well; then put to it one Quarter of an Ounce of Mace, and as much Ginger, and half an Ounce of Nutmegs, some Sweet-majoram, Thyme, Sweet-briar, together a Handful; then boil them in the Liquid, then let it stand by till cold, and then barrel it up for Use.

Of Jellies. Let them be of Apples, Currants, Raspberries, &c. Take out the clear Liquor (when squeezed) and boil it with Sugar till it is as thick as a Jelly; then put it up in Glasses.

Family Medicines.

Almonds of the Ears fallen down. Take a little Role Armo-niac in Powder, and with it mix some Venice Turpentine, and spread it on Sheeps Leather as broad as a Stay, and apply it under the Throat from Ear to Ear.

Ague. Drink the Decoction (that is the boiling of any Herb) of Camomile, and sweeten it with Treacle; which drink when warm in Bed, and sweat two Hours. Or to the wrists apply a Mixture of Rue, Mustard, and Chimneysoot by way of Plaster.

Asthma, or Shortness of Breath. Take a Quart of Aqua Vita, one Ounce of Anniseed bruised, one Ounce of Liquorice sliced, half a Pound of stoned Raisins, and let them steep ten Days.

Days in the above-mentioned ; then pour it off into a Bottle, with two Spoonfuls of fine Sugar, and stop it very close.

St. Anthony's Fire. Take a purge ; and anoint the Place with the Marrow of Mutton.

Bruise or Scald Outward. Take a Quart of Neat's-foot Oil, half a Pound of Red Lead, two Ounce of Bees-wax ; boil them together three Hours, and stir them well—Or Oil of Eldern bathed, or rubbed on the Place, will have the same Effect.

Bruises Inward. Drink the Decoction of Comfrey with Bread and Butter.

Bound in the Body. Take Cream of Tartar, mixed with Honey, very frequently.

Piles or Sores. Eat Rosemary and sage with Bread and Butter, and apply Wheat-flour and Honey by way of Plaster.

Bloody Piles. Take as much Linen Cloth as will make a Suppository ; being wrapped round Button-wise, wet it in the best Aqua Vitæ, or Aqua Composita ; which, properly applied, will help them in two or three Applications. This is an approved and sure Medicine.

Bleeding at the Nose. Put in your Nostrils Coney-wool rolled in Bole Armoniac.

To purge the Blood. Drink often of the Tea of Ground-Ivy, or of Sassafras Chips.

Canker in the Mouth. Take the juice of Plantain and Rose-water mixed, and with it frequently wash your Mouth.

For a Cough. When you are going to Bed, drink Brandy, Treacle, and Sallad-Oil, mixed : Or, take a Mixture of Butter and brown Sugar.

Convulsions in Children. Take unslacked Lime one Quart, and to it put five Quarts of Spring-water ; let it stand 24 Hours, in which Time stir it three Times scum it, and take the clear Water, and let it stand 12 Hours more, then strain it through a Cloth : and being put into an Earthen Pot, put to it Anniseeds and Fennel Seeds, of each a Quarter of a Pound ; Liquorice bruised, and Sassafras, of each an Handful : Let them stand four or five Days, then let the Child drink a quarter of a Pint Morning and Evening, as long as it lasteth.

Consumption. Take as much new Mill as a common Still will hold, to which put the Herbs following, viz. Hyssop, Cowslip leaves, Horehound, and Colts-foot, each a Handful ; and of Maidenhair one Ounce ; let them stand all Night, then still them off ; and when it is to be drank, sweeten it with Syrup of Cowslips, or good Sugar.

Cholic. Beat the Hips of wild-Roses (gathered in Winter) into Powder, and half as much sliced Nutmeg ; mix them, and take some in all your drink ; This is an excellent Remedy.

To cure a Drought in an Ague. Take a small Quantity of Burridge, Sorrel, Violet Leaves, and Strawberry Leaves ; seethe them in two Quarts of fair running Water till it consume to one Quart ; then take Almonds and blanch them, and when beaten, put them to the said Water, and to it put a little Sugar, and drink it warm.

Dropsy.

Dropsy. Take Broom-Ashes and Mustard-seed steeped in a Pint of White wine, of which drink often. *Approved.*

For a Sore Throat. Take Columbines and Cinquefoil, stamp them, and strain them into Milk, and drink it very warm.

For the Gripes. Take a sliced Nutmeg in a Quatern of Brandy warmed over the Fire; to which put the beaten Yolk of an Egg, with a little Water or Sugar; stir them together over the Fire to thicken a little: Take it at night going to bed.

For the Stone, or Stoppage of Urine. Take a Quantity of Thyme, Parsley, Tops of Fennel, and Cinquefoil a like Quantity, five or six Cloves of Garlick; stamp them all together, and strain them into White-wine or Ale, and drink of it Morning and Evening.

To cause an Appetite. Seethe Centaury in fair Water, and drink it in a Morning fasting, to the Quantity of nine Spoonfuls, lukewarm, two or three Days.

An easy and safe Purge. Take Cream of Tartar one Ounce: Jallop and Brimstone of each a Quarter of an Ounce: The Jallop must first be beaten into fine Powder; and mix them thoroughly together in a Mortar; but if the Person be hard to work on, put two Drams of Jallop more.

Small Pox. When warm in Bed, drink mulled Ale with Marygold-Flowers, and sweat a little, to bring them thoroughly out and keep them from sinking, take Brimstone and treacle.

For the Itch. Take Frankincense and beat it small, and mingle it with Oil of Bays, and therewith anoint all over.

For a Burn or Scald. Take Oil of Eldern, and anoint the Place: This is a sure Remedy.

Against the Fever. Take a Handful of Bay Leaves, and a large Handful of red Sage; seethe them in two Quarts of Ale till they come to one, and let the Patient (being in Bed) drink thereof a good Draught warmed, with a little Sugar.

To make an approved Ointment for old Aches, &c. Stamp Smallage, and add to it some Aqua Vitæ and Bear's Grease; stir them well together, and anoint the Place before the Fire, Evening and Morning.

To make Mellilot excellent for Plaster. Take Mellilot, Pimpernel, and Scabions, of each two Handfuls; cut them small, beat them in a Mortar, with two Pounds of Hog's Lard, let it stand in the sunshine seven or eight Days, (it being usually made in June) then melt and strain it well; then add as many more fresh Herbs, and set it in the Sun as before, and then melt and strain it again; then boil it till the Juice is consumed; then take it off the Fire; and put to it beaten Rosin, Bee-wax, and Venice Turpentine, of each one Ounce; when cold put it up in Pots, or make it up in Rolls.

A Monthly List of all the Fairs in England and Wales, in which all the moveable Fairs are fixed to their certain Days.

JANUARY [1] Charlbury. [5] Redburn. [8] Preston. [10] Cawston Dronfield Sheaford. [11] Howden Salisbury [12] Llandovery. [14] L. cenog Nottingham. [15] Pontefract. [17] Buckingham Tavistock. [18] Banwell Grampound Melton-Mowbray Potton Teignmouth. [20] Banbury. [22] Batham. [24] Sheffield. [25] Bingley Bodmyn Bristol Chesterfield Churchingford Kingston Leighton (Bedf.) Plymouth Wexham Whittlesea (Ile of Ez.) [26] Adwalton Knaresborough Leek. [27] Rippon. [28] Llangollen.

FEB. [1] Higham-Ferrers Reading. [2] St. Blazey Evesham Farringdon Linton Lyne Lynn (Mait) Poult Rudland Saltash Wymondham [3] Bale Bath Bromley Dereham Ermington. [5] Llannerchymedd Pontefract. [7] Cappel St. Silin Howey. [8] Chirk Egton Hereford Stamf. [9] Llandaff. [10] Chapel-en-la-Frith Beverley. [11] Leybourn Llandysfyll. [12] Dorchester [14] Althorne Beacousfi. Beaumaris Biddeford Biggleswade Bandon Budworth Camrass Cardig. Devizes Flint Frampton Godalming Hambledon Headon Leominster Looe Maidstone Mold. Northall. Slaidburn Tutbury. [17] Bridgenorth Congl. Stafford Wokingham. [18] Long-Preston. [19] South-Moulton Weldon. [21] Berkhamstead Bingham Colehill (Staff. and Warw.) Liskeard Litchfield Northampton Thirsk. [22] Botley Bury (Lanc.) Caegwrely Danb. Hartley-Row Stone Tregony. [23] Bildestone Campden Dunstable Eron Exeter Falkingham Roylton Tetbury Tunbridge. [24] Banbury Cambon Eglwysfach Frome Henley (Exon) Ireby Pocklington Stoke (Suff.) Teignmouth Walthall. [25] Ashbritle Burnham (Bucks) Canary Derby Feversham Llannerillo Llanfechell Oundle Plympton Ruabon Westbury. [26] Adwalton. [28] Abingdon Chertsey Chesterfield Winton.

MAR. [1] Aldeburgh Bedford Colyford Seaton. [2] Baldock Brackley Liphook. [3] Altherton Bridgwater Fincham. [4] Charl. Frampt. Grassington Stockp. [5] Bolingley Titchfield Tregarron Wantage West-Looe. [7] Aberfraw Blandford Bourn Buckingh. Burnley Chipping-Nor. Cosham Frampton Higham-Ferrers Hingham Kirby-Stephen Langport Nottingham. Tewksb. Uppingham. [10] Norton. [11] Gamelford Llandegla. [12] Corwen Langad. Myddin S. Bourn Sudbury Talgarth (Yorksh.) [14] Bradford (Yorksh.) Burnham (Norf.) Oakham Osveltry. [16] Bettus Caeith Knaresborough. [17] Abbots-Bromley Llangollen Malmsbury. [18] Llanusydd. [19] Helton Market-Jew Ruthin Shrewsb. [21] Cerne Fazley Mold-Narbeth Philips-Norton Salisbury Sedbergh Stamford Worktop. [22] Cattlecary Howd Leom Oakhampt. Stone (Staff.) [23] Aylsham Dolton Retford Skipton Truro Wrexh. Woburn. [24] Bromyard Clitheroe St. Col. Ecclesh. Keynsh. Rippon Upton Wye. [25] St. Alban's Ash Axbridge Bishops Lydeard Carphilly Chagford Churchingford Earls Colne Grampound Great Chart Henley (Warwickshire) Huntingdon Malpas

Midhurst Newark Rudland Stockport Watlington Wigton
 Woodstock Woodbridge. [26] Andover Bodmyn Feckenham
 Hertf. Montgom. Namptwich Odiham Wald. [28] Grantham
 Liskeard Loughb. Magor Patrington Philips-Norton Preston
 (Lanc.) Wisbeach (Isle of E.) [29] Alceft. Chapel-en-la Frith
 Llangerniew Newn Stourbridge Wellington (Salop) [30] Mar.
 Drayton. [31] Durham Newbridge Ottery Settle Yarm.

APRIL [1] Bishops-Castle Reeth Snaith Stevenage. [2] Aberly
 Alnwick Aylesbury Heltone Hitchin Llanidloes Lutter-
 worth Malton Newport (Shropshire) Richmond Shafisbury
 Skipton Wisbeach (Isle E.) Worcester. [4] Ashborne Belbrough-
 ton Chesterf. Elham Falkingham Frettenham Ledbury Magor
 Minst. Nefyn Poole (Montgom.) Swindon Ulpho. [5] Bangor
 Blythburgh Bootle Bridport Budworth Burton Cardigan Clack
 Colnbrook Deal Ditchling Doncaster Elmh. Glouceft. Hail-
 fham Ichwell Kingsclear Lamberhurst (Kent) Lavendon Lud-
 low Moreton St. Peter's Potton Plympton Somerton South-
 wick Tarring Thirsk Trecaftle Wadley near Farrington
 Wallingf. Wickwater. [6] Aberconw. Ivinghoe Kington Llan-
 vylling Newent Uffculme. [7] Atherstone Chapel-en-la-Frith
 Llandysfel Malmfbury Maffingham Norwich Nottingham South-
 minft. Wareh. Wellington (Somersetsh.) [8] St. Austle Droitw.
 Grinton-Hackfield High-Budley Winbourn-Settle. [9] Burn-
 ley Pontefract Skipton. [11] Attleburgh Bakewell Barnard-
 Caftle Boxford Cockerham Darlington Dilton-Marsh Little-
 Driffeld Elham Emfw. Fringinghoe Gresford Guifburn Hales-
 owen Hockham Kegworth Kelvedon Kersey Loddon Manew-
 den Mitcham Dean Newcastle (Staffordshire) Olney Romfey
 Shefford Sleaford Thornbury Warminster. [12] St. Afaph
 Afhby-de-la-Zouch Bafingftoke-Downs Bedale Blakeney Brailes
 Brede Chippenham Cirencefter Clare Cloeaynog Colchefter
 Davenport Dedham Dorchefter (Oxon) Fordftreet Frewenn
 Gainsbrough Godmanchefter Jeventon Milverton Newport
 (Eff.) Perfhore Piddletown Rochford Sandbach Scole Scotter
 Selby Sidmouth Skipton Slaugham Slinfold Tamworth Thame
 Thorncombe Totnefs Toultham Turner's-Hill Windfor.
 [13] Afhill Hartland Hereford Holy-Crofs Leek Otterton
 Redbourn Royston Walton Wellingb. Witherige. [14] Adwalt.
 Beccles Catftreet Cawfton Cheltenham Cricklade Kettering
 Drouf. Stamfordham Whitney. [15] Barnlt. Beaplieu Derby
 Northamp. Rothbury Slaidburn Taugley Yarmouth (Norf.)
 [16] Bigglesw. Brackley Yarm. (Norf.) Worcester. [18] Caftle-
 Acre Evesham Llanellion Padftow. [19] Blockley Elefmere
 Fenny-Stratf. Skipton. [20] Downton Northleach Llandoverly
 Shrewfb. Stoney Stratford. [21] Bedford Chesham Sampford
 Peverell. [22] Allechurh Bury (Lanc.) Pontypool Newport-
 Pagnell Settle. [23] Great Bedwin Bilfen Billey Campden
 Chichefter Cowbridge Finchamstead Gravesend Hatfield Ho-
 lywell Iron-Acton Modbury Norleaf Sawbridgeworth Stara-
 way Whitchurch (Hampshire.) [25] Afhöv. Axminft. Brachn.
 Burnham (Effex.) Crowborough Graffington Guifborn Holt
 (Norf.) Iron-Acton King's Norton Llanerchymieadd Limplh.

Llandegla Llanrwst Loughborough Luton Maiden-Bradley
 Methwold Montacute Great-Nickey Orleton Pocklington
 Southamp. Stoginber Moddington Warkworth Wigmore. [26]
 Caerwith Ovingham Settle Somerton Tamw. Tenbury. [27]
 Abberford Burrowbridge Cerrigy Driudion Dorstone Downb.
 Holfworthy Spalding. [28] Adwalton Soham Reeth Churchinf.
 Newchurch. [30] Chapel en-la-Frith S. Moulton Newmarket
 (Flintshire.)

MAY [2] Little-Brickhill Burnh. (Bucks) Castle Cary Charing
 Cleobury Mort. Cockerm. Callyton Coventry Crowcomb
 Collumpton Derby Fowey Gibrrough Greenstreet Harwich
 Haselner Hope Lancaster Lantissent Laxf. Lowstoft North-
 Petherton Oldham Penryn Reading Redruth Rufford Shoreham
 Stockport Stogursey Stonehouse Tarperly Totness West-Had-
 don Wingham Winkworth Wittersham. [3] Alderburgh Bar-
 ton-Underwo. Broadcliff Bromyard Castle-Heddingham Chard
 Colnbrook Hambledon Heitsh. Higham-Fer. Highbickington
 Poulton Tidesw. Tregony Worsted. [4] Ampthil Bewdley
 Boston Brecon Callington Castlecombe Chagford Cheddar
 Chesterfi Earsh Elmst Frodsham Gosp. Guilf. Harling Henf.
 Hodnett Ipswich Lidney Northallerton Northampton North-
 Duffield Nutley Overton Probus Sharn Tamworth Tenby
 Torrington Wilton Wooburn Wooler Wotton-Basset Wroth.
 [5] Caxton Chorley Llanhriader Pentraeth Porlock Tenter-
 den. [6] Ambersb. Bishops Castle Bourn Bridgstock Buckingh.
 Calne Castle-Town Chawley Chipnam Chipping-Nort. Colef-
 hill (Staff. and Warw.) Dunmow Fursley Gwthrln Halstead
 Hunmanby Kendal Knareborough Knighton Lewes Lifs Llan-
 nerchymeadd Macclesfield Meer Nantglyn Oakham Pensf.
 Pleasley Riborough Stallbridge Settle Stoke-under-Hamden
 Tavistock Tregantha Uttoxeter Wem Wymondham. [7]
 Talybont. [9] Braintree Crawley Debenidd Dudley Guisburn
 Hawarden Hassl. gd. Holdty Horsebridge Kighley Market-
 Bosw. Matlock Padiham Stamf. Tockington [10] Allentown
 Caerleon Egton Fring Harold Leigh East-Skipton Solyhull.
 [11] Alkrig Crediton Dewsb. Dolegelly Eglwysfach Llanidlos
 Staines Worley Common. [12] Adwalton Alfriston Alnwick
 Andover Bagbor West Barnl. Brading Burgh Burwash Ca-
 wood Chelmsf. Coln Congl. Corfe-Castle Crickhow. Evero.
 Lanuf. Laxichangel Ledbury Leicest. Leight. (Huntingdonsh.)
 Linsf. Lingf. Litchf. Little Mountain Lymington Maidstone
 Milthorp Mold Pains-Castle Penbridge Pentre Penybert Rip-
 pon Rowland's-Castle Sherstone Silsue Smith Stanstead St.
 Stephen's-Stoke (Suff.) Storrington Stowe. (Gloucestershire)
 Sbrud Sturminster Swaffham Trefriw Toucheester Tuxford
 Wadebridge Warwick Wendover Wenlock Wivillscome. [13]
 Blackheath Brent Burnley Darley Fl. Haverhill Lanlaw.
 Leonminster Leyborn Ofvestry Pwllshely Rippon Socklebr.
 Waltham H. [14] Abergavenny Arundel Bala Berkley Brans-
 Burton Bungey Chelmsf. Chertsey Denbigh Elllow Fairf.
 Goldanger Guisburn Haltwistle Hamstreet Hartlepoole Hol-

loway Newark Nuneaton Oakhampton Pembroke Pullham
 (Norf.) Rambury Ruchdale Stafford Strafford (Warwicksh.)
 Stretton Church Tattersh. Tewksbury Theff. Titchf. Towyn
 Uckfield Waltham Abbey Weighton Winchelsea Woolbridge.
 [16] Benendon Bettws Caerpwrlley Carnarv. Chatham Everley
 Guisburn Inglewille Llanernigew Machynleth Overton Koach
 Winchcombe. [17] Ashford Brentford Bolney Emergreen
 Groombridge Hay Holbeach Mattish. N. Moulton Newton
 (Lanc.) Penrice Rudham Somerton. [18] Abergely Alcester
 Brentf. Dorstone Handf. Kingsbrumpton Leek Llanfannan
 Morpeth Northleach Westfield Walsingham Workington. [12]
 Atlebury Banbury Bawtry Beaconsf. Beaumaris Beccles Be-
 verley Bildestone Bishop-Aukland Blyth Bottishall Boviy Tra-
 cey Bow (Devon.) Brentf. Brigend Bridport Brighthelmstone
 Bures Burton Chapel-Cunnon Cerne Chapel-en-la-Frith Chea-
 ale Cheltenham Dane-Hill Devizes Dicker Eccleshall Ely
 Eglwylwyw Farnham Finden Framsden Garstang Grantham
 Hallaton Hantlope Hawkhead Helmsley-Black-M. Hereford
 Hundon Kidderminster Kilhampton Kirbylonfale Langod.
 Linton Linton Liskeard Llanelo Mendlesham Middlewich St.
 Neot's Newb. Newport (Monmouthsh.) N. Walsh St. Osfth
 Petworth Rippon Ross Saxmundham Scarborough Sheff.
 Southwich Steiling Stockbridge Stone (Kent) Stortf. Stratton
 Sumner C. Three-Lords Trew Ulverstone Wellingt. (Somerf.)
 Wem Weob. Wetherby Wigan Winsl. Wrexham Woodnesb.
 Yarm Yaxley. [20] Charlbury Rackam Southminst. Stevenage
 St. Udley Wellow Wickham. [21] Ashborne Blackb. Culmst.
 East-Church Hatherleigh Lamberst. (Suff.) Sellinge Sherborne
 Spurty Treacastle Wainfleet Weldon White-Smith. [23] Ab-
 bots-Brom. Albrighton Applesh. Brastead Bridlington Bromhall
 Criecieth Dorking Dunstab. Fletching Grays Guetling Hallat.
 Hindon Horslam Llandwnog Maenclochog Preston (Kent) Ru-
 bon Sodbury Spillsey Swindon Thorpe Wisbeach (Isle of Ely)
 Witham Wragby. [24] Belford Corwen Huddersfield Kid-
 wely Llanvyl. Louth Mark Marshf. Testiniv Woods-Cornor.
 [25] Abberford Bodmyn Cuckf. Market-Deeping Newent
 Sandham Shrewsb. Spaldick. [26] Alton Astwich Brough Cam-
 melford Donnington Kirkoswald Malmsbury. [27] Chipping-
 Norton Horsted-Ka. Pett Ruthyn Thaxtead. [28] Appleby
 Booth St. German's Malton Nefyn Newport (Salop.) Nor-
 wich Skipton Stagshawbank Wisbeach (Isle of Ely) Ackhole
 Aneish. Appleby Ardingley Bakewell. Battle Berkhamstead
 Bigglesw. Billinghamst Binegar Blackburnton Braughing Brix-
 worth Bromyard New-Buckenham Bury Cartmell Chichester
 Coltishall Cranbrook Cromer Crowle Darlington Little-Dean
 Little-Driffeld Dunster Elham Evelham Eye Exeter Framling-
 ham Ham (near Richm.) Harlow Hawes Hellst. Hempnall
 Hitchin St. Ives (Hunt.) Kingston Landaff Launceston Lowha-
 den Llanymyn Manchester March (Isle of Ely) Mayf. Newcast.
 (Staffordsh.) Newport (Hants) Ormskirik Oundle Portbury
 Rochester Rosley-Hill, (and every Fortnight after, till SEPT.

20, at ditto) Rothbury Rotherham Ruist. Salisbury Sittingb.
Sleaford Southw. Spillby Stoke (Suff.) Tarling Toller Down
Turksey Walsingham Wandsworth Warfop Wellington (Suffex)
Wells Westbury (Wilts) West Hoathley Whitchurch (Salop)
Whitdown York. [23] Alford Ashby-de-la-Zouch Bampton
(Devon.) Bedale Binegar Botley Boxtead Buckland Castlecary
Coggesh. Cuckf. Durh. Eastch. Elefinere Elmsett Epping Far-
rington Giffbrough Hatfield-Pav. Hastings Hempton Henly
(Warw.) Hingham Great-Hollingbury (near Woodside Green)
Landover Leighton (Bedf.) Lowes Llangollen Melford Mel-
ton-Mowbray Midhurst Monm. Newark Newmarket (Suffolk)
Ottery Painfw. Pemb. Penrith Purleigh Rochdale Salisbury
Stone (Staff.) Talgarth Tenby Tillingh. Waldershare Wallshall
Wandsworth Warnham Weetwood-Bank (near Wooler) West-
Mersey Woodstock Yardley

JUNE [1] Ambleside Barnard-Castle Basingst. Caistor Kirby-
Moorfide Lampeter Leek Lenton (near Nottingham.) Llandibea,
Ludlow Maidenhead Minehead Newick Redbourn Royston
Steple South-Harting Truro Wansworth Wellingborough. [2]
Adwalton Alphingt. Awburton Askrig St. Austle Birmingham
Bow (Midd.) Buckingh. Dinafimondy Henley (Oxon) Kingth.
Langton Latchington Newport (Monm.) Odell Upton West-
Cotes. [3] Bow (Midd.) Carmarthen Chepst. Derby Hurst-
Green Kingston Merth. Ryegate. [4] Balcomb Booth Kingston
Kirkham Y. Moreton-Hamstead Narbeth Norwich Stokeley
Stowbridge. [6] Althorne Bojani Bradford Burnham-S. South-
Cave Dalton Daventry Dorchester Gillingham Great-Tey
Hampton Honnslow Lenham Messingham Milbourn-Port-Of-
fend Pembroke Pontypool Poole (Mont.) Rayleigh Rowell
Rudgl. Rudg. Seale Southampton Southwold Sutton Tod-
dington Ulk Watford Williton Windfor. [7] Abergavenny
Holywell Montgom. Sheffield Somerton Sutton-H. Swineshead
Watford Weeton. [8] Aberfraw Ravenslafs. [9] Cairwlyth
Carphilly Chapel-en-la-Frith Chirk Christ Church Harlech
Kidderminster Kilhampton Llannerchymead Neath Penzance
Steyning Stortford Thorp (near Egham) Weobly. [10] Berw.
Coventry Ingham Pentraethion Testinvg. [11] Amberbury
Axbr. Brandon Chipman Chudleigh Gayw. Gramp. Lantw.
Liphook Menchiot Newnham (Glouc.) Overton Stanford
Stanton Stratf. Tolesham Darey Wokingham. [13] Benbury
Barton (Linc.) Belton L. Bines Green Clunn D. Flint. Deviz.
Hallaton Haverford-West St. Neot's Prescot Ross Whittlesea
(Isle Ely) [14] Aylsbury Hailsham. [15] Bampton Manninree
South Mon'ton Ramsey. [16] Falkingham. Frogatheath Pollstead
Wrexh. [17] St. Alban's Bradfield Grimsby Taunton Thorne.
[18] Chepstow Rotherfield Stockland. [20] Abingdon Colef.
Howey Midstone Stamford Whitchurch (Hants.) [21] Aldeb.
Bishop-Aukland Llanidlos Llanwrst Newbrough Tiverton
Workfop. [22] Appledore Bardfield Bettws Blotchingley
Brampton Broadwater Boroughbr. Cross-in-Hand Halefowen
Hatherleigh Heyant Holt (Denbigh.) Horncastle Lambert-
Castle

Castle Ledbury Macclesfi. Newburgh Newcastle (Caermar.) Newport-P. Selby Shipstone Tewksbury Wadebr. Wellington (Salop.) [23] Llandeg. [24] Aleonb. Arlesford Barnet Benth. Broughton Bradwell Bridgwater Bromsgrove Cambridge Cannewden Colechest. Debenham Farnham Flint Fransi. Glemsford Hadleigh Halifax K. kham (Lancash.) Leighton (Yorkshire) Moor-Kirk Much-Hadham Newton-Ab. Oxford Prielteign Ruisford Shafsb. Silverton Sudbury Wallingford Wells Witheridge. [25] Bargo. Barnet Canvey-Island Forrest-Row Malham. [27] Buith C. treet Machynleth Newport (Pemb.) Perth. Sainfieldryn Wigam. [28] Bolton (Yorksh.) Bradford (ditto) Folke. Hadstock Harrold Higham-Fer. Huntingdon Llanyylling Standish Yeovil. [29] Axmunt. Bale Bath Beeches Bemington Brackley Bradford (Yorksh.) Buckfattleigh Buntingford Cambron Cardiffe Great Clacton Fureham Grassington Hattley R. Hitton Hodfston Hook-Norton Hunspill Landrake Langport Lingf. Llangernew Lostwithiel Mansfield Newnham (Kent) Okhampton Olney Red-Lynch Reephant Rhydyll-frody Spalding Stafford Standish Stebbing Tolesb. Tring Wadhamit Watton Wem Winterburn Witney. [30] Bradford (Yorksh.) Bridgnorth Boxstead Harlech Thaite.

JULY (1) Crickieth Drufflwyn Hastingden Heref. Newenden Penrhurit Thorney (Isle E.) (2) Ivelchester Richm. Testuing Toller D. Walton (Est.) Wickwater Ystradmirik. (4) Broughton-H. Chesterf. Doff-gelly Falkingh. Great-Poole M. Leek Salop Sidley Spurtv Stagshawbank Wakefield Whitesmith. (5) Athborne Bedale Bidd. Beverley Bishops-Cattle Brecon Bryset Burford Chester Chelmsford Church-Whiffeld Clayton Congleton Couthorpe Croydon Devizes Dorchester Ealingw. Eymynge Gloucester Harestone Harriotham Haxey Hertford Kennington Lancaster Lauceston Leicest. Lincoln Littlebourn Llannerillo Messing Nabeth Newbury South-Petherton Pevensy Flint Pontypool Probus Ruiton Torrington Tunbridge Ulpho Underwood Wainfleet Wakefield Wareham Warwick Wenlock Winterton Woodland. (6) Bedale Kettlewell Newcastle (Staff.) Royston. (7) Bovey-Trac. Brentwood Brumh. Chapel-en-la-Frith Kenningh. Laycock North-Painpill Penryth Taunton Uppingham Whitchurch (Hants.) (8) Southwater. (9) Langadock Machynleth Uffculme. (11) Abbotsbury Ashington Bala Blundt. Buckingham Burnley Carm. Dulverton Foulneys-Island Frodingham Godalming Grantham Hollington Holsworthy Mythe Iver Knotsf. Lampeter Leeds Leominster Macclesfield Market-Bosworth Marlborough Mountforrel Pembroke Peterbor. Petersf. St. Peter's Portsmouth Ringw. Scotter Sevenoaks Southam Stockbridge Stoken-Church Stowmarket Sudbury Talgarth Thaverton Upton Wolverhampton York. (12) Cairwith Howdon. [13] Conglet. East Grimt. Neath Swanzey Wooburn. (14) Spillsby Winterringham. (15) St. Asaph Dronfield Great-Bedwin Long Hadh. n Bury-Green Prittlewell Seamore Stevenage Twyford Up-Holland. (16) Burton Helmsley-Blackmoor Milkham Newmarket (Flint.) (18) Albrighton Alburi-Putmore-H. Atherstone Barwell Bent-

ley Biddef. Camelford Chipping-Norton Cirencester Denbigh
Emfsw. Fenny-Stratford Haverford-west Horsham Kirton Llan-
nidlos Llanbiddar Moreton-Hamstead Morpeth Newcastle
(Carmarth.) Overton Patrington Penrice Sherborne Stockton
Tenbury Topcliff Wantage Warrington. (19) Bolton (Lanc.)
Carphilly Clay. (20) Alfreton Barkway Bergholt Batley Caer-
leon Hellstone Honiton Kingsbridge Leonard Stanley Ross
Teuby. (21) Breeding Blouyard Clithero Corwen Garstang
Swaffham. (22) Ashington Bigglewade Billericay Chessham
Dartford Ely Frome Haworth Kidwely Monckton Newton
(Hants.) Ramsay Tetbury Whitgift. (23) Colchester. (25)
Alnwick Arlesford Barnard-Castle Berkhamst. Bilden Bilstof
Bromley Campden Castle-Acre Chelwood Little Clackton
Derby Dunw. Earith Epsom Ewhurst Fotheringay Gilling
Harpley Hockhold Ipswich Llanriader Leigh (Kent) Kidd
Linsey Liverpool Luggershall Malpas Middlewich Milton Mil-
verton North-Down Pocklington Poulton Reading Seaford
Shoreham South-Reppo Staple Stone (Staff.) Tiptery Place
Torrington Totness Tregony Trew Trowbr. Great-Waker-
ing Waltham (Hants.) Wigmore Wisbech (in the Isle of Ely)
Yaenmouth (Hants.) (26) Abbey-Milton Clare Hastings Horse-
manden Kirby Llanellion Landsawel Leighton (Bedf.) Pift-
Down Sherborne T. m. w. (27) Falm. Market-Deeing New-
port (Salop.) (28) Leek Menchint Winchcomb. (29) Chailey
Matingley Wevel-field. (30) Chirm. Hornby Llanamanon in Yale.

AUGUST (1) Angecm. Barton (Hants.) Betherf. Brightlingf.
Brookland Broughton (Lancash.) Burnham (Norf.) Chepstow
Corfle-heath Cowbr. Cowling Exeter Frampton Henfield
Hoo Lampeter Landov. Lantiffet Lidford Green Loughbor.
St. Margaret St. Margaret (near Marlbor.) Newent North-
Curry Odiham Ottley Partney Reddich Slaidburn St. Ger-
man's St. Nept's St. Stephen Stogumber Summerton Tlandif-
ton or Francion Uttoxeter Uxbridge Wisbech (Isle of Ely)
Whitehaven. (2) Battlefield Bridgnorth Calne Chumley Hea-
don Ickleton Ivelchester Kewick Kingston Kingston Llangorid.
Long-Cromarsh Magdalen-hill (near Winton) Mold Newark
Norwich Stockbury Stony-Stratford Theif. Wedm. Wisbech
Yarm. (3) Davent. Hitcham Kington. (4) Garav. Earl o'm
Esher Higham-Fer. Llandegla Kingston Thirsk. (5) Altringham
Ashton-under-Line Audley-End Bicester Boscatt. Castle-Town
Chard Cheltenham Cheritsey Chichester Doncaster Dorchester
(Dorset.) Dudley Ecclesh. Garner-str. Hatfield Broad-Oak
Hexam Kirkosw. Llanfechell Langindairn Northampton Oke-
hampton Queenborough Ravenslaß Rhos-Fair Saltash Skipton
Stamford Staverdell Thraplton Thirsk Wattlefb. Westbury
(Salop) Werberby. (6) Biddock East-Illey Goldsmithy Holt-
wood Linfield Rhuyadar St. Ann's Hill (Devizes.) (8) Crw-
comb Carry-Rival Horning Howcy Rulhin Slepton Mall. t
Shifnal Stamford. (9) Llanrwst. (10) Allucchurch Appleby
Ashpurton Deddington Duffryn Flint Hawkhurst Hunstperp.
Landfil. St. Lawrence (Corp.) St. Lawrence (Kent) Leachlede
Membury Newburgh Priddy Snaith Thaxted Waltham-Saint-

Lawrence Warminster. (11) Boston Lunningworth and Snape: [12] Banbury Bettws Bridf. Caergwryley Carmar. Chrifflingham Magna Dunholme Dunstab. Peversham-Green Hay Highwor. Hornsea Linf. Malling Newcastle-upon-Tyne Newton (Lanc.) Plympton Sheepwash Shrewsb. Sleaford Stowmark. Talybont Tregantha Uffculme York. (13) Bakewell. (15) Attleburgh Carphilly Keynsh. Lelant Liskeard Llanfydd Market-Wellton Newport (Mon.) Oswestry Otterbury Harmon. St. Mary-Hill Stanifordham Thorub. Trecastle Tenbury Worcester. Yarlengt. (16) Ashborne Brigg Burgh Louth Pentraeth Telfham. (17) Dallwood Donnington Knarefbor. Llanderfel Llanfannan Pen-ytstreet in Trawsfyddd. (18) Aberwingregiu Beddgelert Chapel-en-la-Brith Clynnogfwr Emfsw. Navenby Rippon Settle. (19) Pwllheli Reath Settle. (20) Abergely Blachmore Chorley Moorlinch Peumorfa Settle Weldon. (22) Arundel Bedford Cayo Cheadle Crediton Farnham Frodsham Handford Harlech Hartlepool Horncastle Hungerford Kilgarren Hillh. Llangollen Ludlow Martock Melton-Mowbray Mwrvas Newburgh Oundle Romney Rugby Settle Stroud Testinivg Winslow Wotton-Eagle. (23) Belford Botley Penmachno. (24) Abbots-Bromley Ashby-de-la-Zouch Barnet South-Benfleet Brachnell Buckfattleigh Chipping Cranborne St. Decuman's Eglwysfach Zipmash Lambert-Castle Lee Lostwithiel Meer Newbury Sallcot Southwold Wainfleet. (15) Barnet Bingley Coxw. Elefmere Haughley Hermitage Landrake Lantais. Nefyn Partney Ripley (Yorksh.) Watchet. (26) Bampton (Oxfordsh.) Barnet Bingley Bleagon Borth Carlisle Carby East-Brent Eldon Gisborough Courdlhurst Haverhill Hermitage Hinkley Ilmister Little-Driffeld Northampton Forthaeathwry Preston (Lanc.) Rhos-Fair Ripley (York.) Romsey Swanzeay Stroud Tollerton. (27) Bingley Cerigy Druidion Gsbrough Ilmister Rhayada Ripley (Yorksh.) (29) Cawston Gref-ford Kilmington Llannerillo Morbath Overton Pampill Phillips-Norton Sanford-Peverell Tarperly. (30) Linton Newn Spalding. (31) Bampton Lambert's-Castle South-Molton Wicks.

SEPT. (1) Alston Dronfield Gillingham Marham Pontefract Spittle Tregony. (2) Hingham Holywell Kettlewell Penkridge Steeple-Ashton Snaith Stevenage. (3) Llanidlos Long-Preston Trefrihiw Wirk. (5) Aberconw. Beaulieu Brighelmst. Brigstock Buckingham Burnham (Essex) Burwash Chipping-Norton Chorley Corsh. Crewkerne Egdean Egton Birmingham Frampton Hatherleigh Haverford-west Horringer Kidderminster Kings-Norton Kingston Lampeter Leominster Maresfield Monmouth Montgomery Namptwich Newcastle Old-Chapel Playden Redruth Road Sidmouth Silverton Stallbr. Stockwith Tewksbury Toddington Wanbro' near Guilford Warmick Westham Whittingham Wvenhoe. (6) Baddlesin. Camelf. Donnington Market Rasen Ware. (7) Holy-Cross Kilmington Newton-Abbot Prest. (Lanc.) Stowey Tidefw. Wymondh. (8) Bishops-Lydeard Cardiff Cardigan Denbury Pritend. Glastonbury Ormskirk Rudland Stourbridge Talsarn Wymondham. (9) Ashford Bishops-Castle Broadworthy Caer-

wyth Carmarthen Epworth Fordingbr. Harlestone Harlow
 Helstone Leachlade Newent Tavistock Weston Zoylamm.
 (10) Brecon Dinafnondy Fowey Newport (Salop.) St. Mary-
 Cray. (12) Adversean Brentf. Dundy Fonceit Giles-Hill near
 Winton Horsebridge-Common Horsted-K. Neath Oakham
 Poole [Montgom.] Stogursey Tamworth Toller-D. Wareh.
 Wilton Wimple. (13) Brentf. Dilton Marsh Holbeach Iron-
 Acton. (14) Ashil Baffildon Brentford Congerbury Frome
 Goodnestone Lincoln Pickering Richmond Ryegate St. Udey
 Sumer-Court Wherewell Winbourn Witham. (15) Brentf.
 Durham Grimsby Mark Sandbach Upton. (16) Bettws Freshf.
 Lutterworth Tillingham Woolpit. (17) Bellingham Llanrwst
 Lee Masham Northiam Peirice Probus Wantage Weldon Wil-
 mington. (19) Abingdon Amersham Atheritone Barnstable
 Beauminstre Beauma. Breewood Buckland St. Mary Callingt.
 Carlisle Chatham Clack Crawley Cuckfield Eastmeon Egre-
 ment Gisbrough Guisburn Hartlebottle near Rothb. Kirby-
 Moor side Llandysfel Little-Driffeld Machynleth Maldon Mar-
 ket-Drayton Masham Northampton North-Bradley Painswick
 Partney Shouldham Silmiston Staynes Steyning Sturbich-Fair
 Swindon Usk Uttoxeter Waitham (Leicestersh.) Waterleigh
 Week St. Mary Westerham Woodbury-Hill (near Bere) Worc.
 Wootton-Courtney Wrexham. (20) Dollegelly Gisbrough. (21)
 Backwell Basingstoke-Downs Bridgwater Burnham (Bucks)
 Caerleon Chudleigh Clapham Crediton Cricklade Evesham
 Hawkshhead Ireby. Knighton Liskeard Lyme Maiden-Bradley
 Manchest. Padst. Penmach. Penylstreer in Trawsf. Plymouth
 Reading Shadbrook Silsoe Tendering Thorney (Isle of Ely)
 Woodbr. (22) Llannarth Llemuwellyn Yarbboro'-Castle. (23)
 Beddgelert Clynnoferw Derby Saxmundh. Talgarth Tuxford
 (24) Bootle Haverford-west Langport Pwllhely Streton-Ch.
 (26) Abergav. Arundel Aylesbury Belton (Lincolnsh.) Bungay
 Burford Chesterfield Clayton Denbigh Easingwold Grassing-
 ton Groombridge Hartland Haselmere Headon Ipswich Nar-
 beth Newburgh Padliham Pembr. Penmorfa Porthaeth Ramf-
 bury Khayader Rockingham Rotherisbridge Shroton Spalding
 St. Stephen's Stratford (Warw.) Tattershall Testinivg Tenb.
 Thetford Tichfield Waltham-Abbey Wighton Wivilscombe
 Wootton-Under. Wycomb. (27) Aylsham Derby Dorst. St.
 Ninjon' (near Fenton) Powder-Batch Rogate Spotty. (28)
 Chesham Dercham Gloucester Llanrhiader Ludlow Newbridge
 Northleach Stanford. (29) St. Alban's Alton Ash Blackobys
 Canterbury Chagford Cranbrook Framlingham Frewenu
 Henley (Oxfordsh.) Hope Horsebridge Llangerniew Llanymy-
 neck Lowestoff Maidenhead Markejew Meer Smith South-
 minster Stoken-Church Teignmouth Tring Wallingford Wat-
 son Woodham-Ferris. (30) Blackburn Brough-Hill Feckenham
 Llanelly New-Church Ongar Ruthin.

OCT. (1) Brachpall Brading Bromsgrove Culmstock Dinaf-
 monddy Hawarden Catharine-H. Otteley Redruth. (2) Aber-
 guilly Appletrew. Baldock Beccles Bolton (Lanc.) Braithree
 Buckingham Budworth Builth Burgh Cerne Colehill (Stafford.)

Golehill (Warw.) Croydon Daventry Devizes Downst. Dudley Easby Frodingham Hambledon Helmsley Blackm. Hingham Hullworthy Lamborn Howden Ledbury Lews Malling Nayland Northallerton North-Tawton Nottingham Peterbor. Retford Rothbury Rudham Sherstone Shrewsb. Staff. Swinehead Tarring Warham Wendover Woodstock. (3) Corby Hounslow Nottingham Pentraeth Mon Sherborne Worklop. (4) Alnwick Harrold Maccles. Malham Nottingh. Ubley Walshall. (5) Axminster Drustlyn Inglewhile Lansadwin Llanellion Llanvylling Leighton (Huntingdonsh.) Rochford Roylton Steeple. (6) Bishop-Aukland Blyth Brackley Cayo Chapel-en-la-Frith Chertsey Dewsbury East-Hagburn Gaywood Market-Raisin Porlock Sherburn Wooburn. (7) Billericay Bury Stockton. (8) Challock South-Moulton. (10) Aberconway Abergeny Barnley Basingstoke Bedale Birmmgh. Blockley Brent Bridport Buckland Carmarth. Charlbury Chester Chichest. Cocker-mouth Corwen Deal Dolegelly East-Bourne Falmouth Fazley Fenny-Stratf. Gosport Great-Thurlow Hadleigh Harlepool Hullingden Hay Higham-Fer. Hodnet Hull St. Ives (Huntingdonshire) Kegworth Kettering Kingland Lancaster Llanvichangel Lavenham Leicester Lenher. Looe Malton Marden Market-Deeping Matby Milden-Hall Milverton Mitchel-D. Moreton Newhaven (Suff.) Norton Ower-Mayne Penkridge Pentree Pontypool Ross Rushlag-Green Sittingbourn Selby Sheepwash Shelford Shouldham Sleaford Smarden Solihull South-Brent Steyning Stony-Stratf. Stortford Stowe (Lincoln.) Swindon Tavist Tewksbury Thane Tiverton Torrington. Uxbridge Wadebr. Watlington Wells Weyhill Withyam Yarm. (11) Bedale Bedf Blackh. Burnley Coln Kingsclear Monckton Hitchin Llandoverly Northop Otterton Seven-Oaks Sockle-bridge (13) Banbury Chapel-Cunn. Epping Lymington Mansf. Rackham Rhos-Fair Wigan Windfor. (15) Ashover Carlisle. (17) Alcester Alphonston St. Asaph Bakewell Ballbroughton Christchurch Cowling Donnington Havant Ivinghoe Knaresb. Llanrhiad Dyffin-Alwyd Llanuwchllyn Maidstone Navenby Swinstead Thorne Turner's-Hill Wellow Wenlock Wooller. (18) Barnet Bellbroughton Little Brickhill Charleton Chipnam Chisleborough Cowbridge Criecieth Dorstone Eversley Farindon Halefworth Harwich Hatfield Haverford-west Henley (Warw.) Hindon Kilkham (Lanc.) Lantrissent St. Lawrence Laxfield Luton Midhurst Newnham (Gloucestr.) Newton-Peppleford Overton Partney Tidefw. Uphaven Usk Winterburn Workington. (19) Abborford Barnet Corfe-Castle Lamanon-in-Yale Lampeter Market-Harborough Partney Sawbridge-worth Testinivg Trevena Whitechurch (Hants) and the two following Saturdays at Swanzev. (20) Ashborne Cerigy Druidion Chichester Colchest. Devizes Elham Ely Gainsbrough Hereford Kingsbrampton Rothersfield Slaidburn Tenby. (21) Blackburn Bridlington Concerdd Rudgley. (22) Barking Booth Carlisle Clithern Newmarket F. Newport-Pagn. Overton. (24) Aberfraw Brampton (Devon.) Borth Burrowbridge Caistor Cloeynog Dalton Harling Hastings Llangenock Lau-

sawel Leighton (Bedf.) Leneam Market-Drayton Marshfield
 Matlock Newn Forthaethwry Ripley (Derbysh.) Spotty Stow
 (Gloucestersh.) Sturminster Tamworth Upottery Wainfleet
 Winton. (25) Aberwingregin Cartmell Mortimer Potton Per-
 shore Queen-Camel Stockport Whittlesea (Isle of Ely.) (26)
 Abberford Grantham Llandegla Llanfannon Ovingham. (27)
 Aberguilly Bromy. Caergwrley Cleobury-Mortimer Darley-
 Flash Daventry Marsh (Isle of Ely) Nantglyn Ulverstone. (28)
 Ashby-de-la-Zouch Alkrig Bangor Biddenden Biggleswade
 Chepstow Cullompton Dis Droitwich East-Dean Edwinstone
 Forest-Row Llandilos Liffon Linli. Milbourne-Port Needham
 Newbury Newmarket (Suffolk) Pocklington Plympton South-
 Harting Thirsk Tornes Warminster Watton Whitechurch Salop.
 (29) Abbey-Holm Ambleside Askrig Banbury Bourn Bridge-
 north Broadwater Burton Chigford Charring Chedder Ewel
 Halstead Hampton Henley (Oxfordshire) Holt (Denbighshire)
 Howey Hunmanby Kidwely King's-Cliffe Kirkby-Stephen
 Marlow Mongham Newcastle (Northumb.) Pleasley Radnor
 Sedberg Stainton Thirsk Towcester Tunbridge Wellingbor.
 (31) Crowcomb Llanlleclyd Newhaven (Derbysh.)

Nov. (1) Coventry Earith Fordstreet Llanybiddar Lytcham
 Newark Prescot Rothbury Settle Wadhurst Walden Wingham.
 (2) Altringham Bletchingley Buckland Chard Downham Farn-
 ham Helmsley Blackmoor Hoxne-Loftwithiel Loughborough
 Toddington Wilton Wokingham Wye. (3) Bromfield Camp-
 den Poole (Dorsetsh.) Swaffham Talgarth. (4) Eccleshall
 Litchfield. (5) Appleshaw Llanfechell. (7) Barwick-Hill
 Helmsley-black-moor Horley Lampetar Manchester Middle-
 ham-moor Newton-Abbot Newcastle (Stafford) Newport
 (Monm.) Rochdale Sutton (Hants) Talfarn Trefrihw Tre-
 gony Witchbury. (8) Aberconway Alford Barton-Under-
 wood Bingham Blanford Buckingham Chilham Chipping-Nor-
 ton Cirencester Dulverton Dunmow Hatherleigh Helstone
 Hertford Hexham Kendall Kighly Knotsford Llamedy Llan-
 rhiader Leeds Leominster Lidney Messingham Pensford Rom-
 sey Stamford Stratton Sutton (Warwicksh.) Warwick Whis-
 ton Woodstock. [9] Albrighton. [10] St. Austle Caeirwith
 Chapel-en-la-Frith Falkingham Porlock Ruthin. [11] Ashbur-
 ton Brandon Cambron Langport Lenton (near Nottingham)
 Liverpool Macclesfield Newburgh Nunny Penrith Phyllhely
 Reeth. (12) Amlwch Billey Blakeney Brumpton Callington
 Camrass Chelmsford Chirk Dunstable Fairford Halcheston
 Kilgarren Kilham Lanwinio Lincoln Little-Mountain North-
 Moulton Penmorfa Pentraeth Mon Rowland's-Castle Stelling
 Stoney-Stratford Three-Lords Wakefield Wooburn. (14)
 Allentown Amberbury Biddeford Bishop's-Castle Carmarthen
 Dinasmoudy Elefinere Gisbrough Huntingdon Kingston Lla-
 nerillo Leek Loddon Mayfield Montgomery Porthaethwry
 Trecafe Wakefield Wootton-Basser. (15) Egton Ottery. (16)
 Andover Beverley Poole (Montgom.) (17) Brecon Bridgend
 St. Columb Headon Hummendon Ingleton Launceston St. Leo-
 nard's (near Bedford) St. Leonard's (Suff.) Malling Newport

Otterford Warfop Willington Wells Yeovil. (18) Cuckfield
 Dorstone. (19) Cross-in-Hand Truro. (21) Aberwingegin
 Conwydd Dolton Feltwell Llanufydd Llannybiddar Betworth
 Rnabou Skipton. (22) Battle Bawtry Boscastle Bow (Devon.)
 Brigstock Clunn Crowle Darlington Deddington Dollegelly
 Dover Fairbach Falkingham Fillingham Guilford Halwistle
 Hempton Llangollen Lawhadri Marlborough Martin's-Town
 Mold Monmouth New-Buckenham Newcastle (Carmarthen-sh.)
 Pembridge Rippon Rugby Scarborough Shafesb. Shifnal Skip-
 ton Stamford-bridge Standish Sterrington Warkworth Wem
 Wetherby York (and every other Thursday in the Year at
 York. (23) Witney. (24) Coleford Eglwysfach Holt (Norf.)
 Langtown Penzance. (25) Chesterfield Clipping-Norton El-
 stow Frome Gravefend Machynleth Thwoite. (26) Castle-T.
 St. Ive's Landoverly Llanfdechell Little-Dean. (28) Bakewell
 Eglwysfwrw Fenny-Stratford Gloucester Gossynon Harlow
 Harlepool Hook-Norton Horsham Northampton Sheffield
 Llangerniew. (30) Alfriston Belchamp St. Paul's Broadham-
 bury Flint Fring Hemphall Llanfan. Maidenhead Moreton
 Hampst. Northwold Prest. Warringt. Wells Week St. Mary.

DEC. (1) Hythe Ingatestone Penrice Rotherham Tutbury.
 (2) Sputty. (3) Ashton-under-line Bettws Garstang Louth Tal-
 garth. (5) Atherstone Carnarvon Cursley Gressford Lamborn
 Newark Penybout Pluckley Sandwich Staff. Tenby Wenlock.
 (6) Bodmyn Bulth Cornhill Cranbourn Exeter Gressingham
 Launceston St. Nicholas Northwich Sidland Stoke (Norfolk)
 Tockington Toddington. (7) Cerigy-Druidion Clithero. (8)
 Llanellion Leicester Ludlow Malpas. (9) Barnstaple Bradfield
 Leybourn. (10) Bewdley Bolney Lanon Liskeard Newmarket
 Flint Newport (Salop) South-Moulton. [12] Aberfraw Abing-
 don Ampthill Baldock Bettws Bewdley Bolney Boston Brack-
 ley Chagford Chawley Coham Colindale n-Duces East-Grinstead
 Gargare Gringley Harlech Kimbolton Kinton Ladgadock
 Lanport Llanrwst Narbeth Oswestry Petersfield Ringwood
 Rochester Ross Shrewsbury Stratton Tavistock. [13] Bedale
 Knaresborough. [14] Thirsk Treacastle. [15] Kettering Nant-
 wich. [16] Comb-St.-Nicholas Dollegelly Newn. [17] Arundel
 Grantham Heltone Higham-Ferrers Hornsea St. Neot's N.
 Tawton Spalding Wallingford Woodstock. [19] Beaumaris
 Bedford Cardigan Ledbury Northampton Pains-Castle Thorn-
 bury Truro Wootton-Basset. [20] Bradford [Yorkshire] [21]
 Boxford Bradford [Yorkshire] Droitwich Grinton Hawarden
 Highbiekington Kirkby-Lonsdale Laycock Penryn. [22] Brad-
 ford [Yorkshire] Carphilly Newport Pagnell [24] Alnwick
 Hawarden Llanwnen. [26] St. Asaph Beckley Corwen. [28]
 Cock-Hill. [29] Bridgwater Stonehouse. [30] Milbourn.

F I N I S.



